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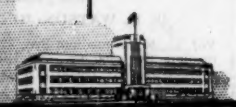

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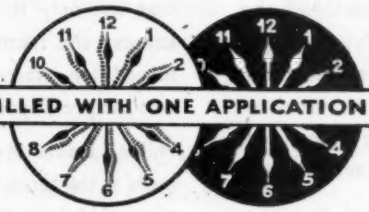

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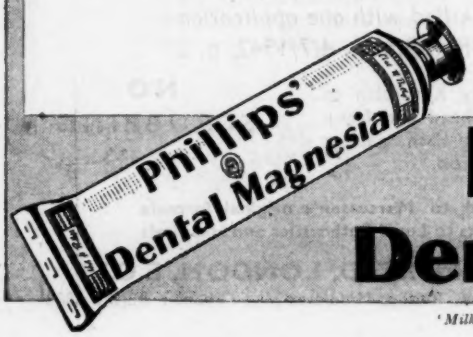

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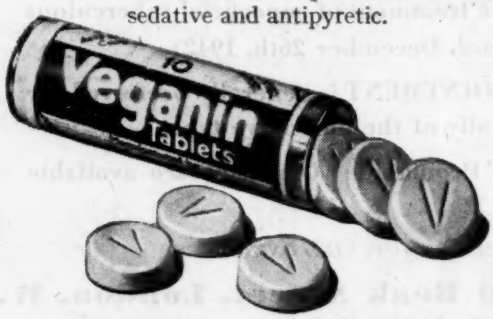

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ANXIETY NEUROSIS IN COMBATANTS

C. P. SYMONDS, D M OXFD, F R C P

AIR-COMMODORE; CONSULTANT IN NEUROPSYCHIATRY, RAF; PHYSICIAN FOR NERVOUS DISEASES, GUY'S HOSPITAL; PHYSICIAN, NATIONAL HOSPITAL, QUEEN SQUARE, LONDON

THERE is little difficulty in describing the symptoms of what is generally called an anxiety neurosis as they are seen in combatants, nor is there much doubt in most cases about the origin of this neurosis in a state of fear. It is much more difficult to give an account of the process by which fear, which may be regarded as a normal state, under certain conditions of flying or battle stress gives rise to the neurosis which must be regarded as an abnormal or morbid state. The most popular hypothesis at the present time is derived from the psychopathology of Freud and his followers. According to this hypothesis, anxiety is an affect which arises when as the result of emotional conflict there is frustration of instinctive desire. In the case of war neurosis, whether in flying personnel or other combatants, the conflict is between the instinctive forces of duty, self-respect and loyalty on the one hand and self-preservation on the other. This point of view is succinctly stated by Gordon and Hargreaves (1940) thus:

"In the last war it was said that soldiers broke down because they could not stand the strain of war, but it was really the strain of conflict between their self-preservation instinct and the demands of the ideal they had set themselves in respect of duty and self-respect. Such a conflict, whatever it be, will induce a severe sense of insecurity with its attendant emotion of anxiety. If the conflict is not resolved the anxiety continues. . . ."

Those who support this hypothesis generally assume that the sufferer is himself unaware of the nature of the conflict.

Curran and Guttmann (1942) say: "The sufferers (from anxiety states) are usually unaware of the nature of their conflicts or at least do not face them openly," though in a later publication (1943) they imply that an anxiety state may arise without conflict. Henderson and Gillespie (1940), who prefer the term "anxiety psychoneurosis" in order, apparently, to emphasise the correlation with a specified psychopathology, define a psychoneurosis as implying "either bodily disturbance . . . dependent in a way unknown to the patient on mental causes; or a mental disturbance not the result of bodily disease . . . which the patient realises to be abnormal and the meaning of which he is at a loss to understand." The nature of the affective disturbance resulting from this conflict is variously defined. Curran and Guttmann (1942) regard it "as a condition of fear not clearly focused on any special object"; James (1940) as an emotional state closely allied to fear; Henderson and Gillespie (1940) as "a state of morbid fear."

AN ALTERNATIVE CONCEPTION

These extracts are representative of a view which regards the anxiety neurosis or psychoneurosis as an affective state closely resembling if not identical with fear, having its origin in an emotional conflict of which the patient himself is partly or wholly unaware. In war the conflict is between fear and other emotional forces. A different conception is that which refuses to accept the doctrine of a specific psychopathology. According to this view the anxiety neurosis is a state of fear which is morbid only in so far as it is not adequately accounted for by the circumstances in which it is present. It is conceived simply as a disturbance of function in that part of the mind, or at that physiological level which is concerned with the generation of affect. No fixed pathology, whether psychological or physiological, is included in this conception. It is recognised that many factors may operate in the ætiology and that these may be hereditary, physical or psychical. An anxiety neurosis according to this conception therefore may be precipitated by cerebral injury, infection or intoxication, especially if there is inherited predisposition, without the existence of adequate psychical factors. It may equally result from psychical causes such as catastrophe or danger without any physical factor, or both factors may operate together. The exponents of this view regard the anxiety neurosis of war as a morbid state of fear developing out of a natural state of fear, allowing at the same time for physical factors such as exhaustion, infection or intoxication.

Thus Mapother (1935) stated that the anxiety neurosis of war "was an over-excitability of the fear mechanism and was constitutional, or the result of stress of special duration or severity, perpetuated by situations which had become conditioned stimuli in the particular individual." In his evidence before the Shell-Shock Committee (Mapother 1922) he had expressed a similar opinion with regard to shell-shock, stating that it was "due to mental strain or shock too prolonged or too intense for the particular individual to endure without the emotion becoming persistent. In some cases the strain or shock was quite inadequate to cause the resulting symptoms in a normal man, but was adequate for that individual on account of constitutional predisposition or acquired predisposition due to bodily causes such as infection."

Thus the anxiety neurosis of war has been explained by two quite different theories, one assuming a particular affective disturbance resulting from unconscious emotional conflict, the other assuming an undue intensity or persistence of fear due to over-stimulation of the fear mechanism. Both hypotheses have in common the assumption that fear is the original source of the neurosis.

TWO CONCEPTS OF ANXIETY NEUROSIS COMPARED

It is necessary for the argument at this stage to consider briefly the ways in which these two concepts have developed. The psychopathological theory is founded upon Freud's concept of the psychoneuroses as resulting from conflict between the libido and the ego. No attempt can be made here to explain in detail what is meant by these terms. Broadly speaking however the libido included all positive urges or desires which could possibly be associated with sexual relationships; the ego stood for the rest of the personality. In the infant the libido was unimpeded, but as the personality developed education and social pressure made conflict inevitable. As a development of this conflict a split occurred between the libido and the ego, the former together with the ideas and memories centred upon it being relegated to the unconscious and kept there by the barrier of repression. The libido could pass this barrier only in a form acceptable by its custodian the censor. Successful passage of the barrier was described as the process of sublimation and this process was the essence of mental health. Failure of sublimation was likely to result in a piling up of libido whose attempts to pass the barrier of repression were frustrated. Such frustration of the libido gave rise to a feeling of tension or affective disturbance, which constituted the basis of the anxiety neurosis. This theory, enunciated before the last war, supposed the conflict always to be between sexual urge and repression. During that war the frequent occurrence of anxiety neurosis under conditions in which it was quite clear that the source of the neurosis was fear led to modification of the theory by many of its exponents (Rivers 1924, Hart 1929). The anxiety neurosis according to this modification could result from frustration of any one of the instinctive forces, and under war conditions the instinct frustrated was that of self-preservation, not sex. The mechanisms of repression and sublimation however were the same as those which operated when the conflict was between the sex urge and other elements in the personality, and the resulting feeling of mental tension or anxiety was also the same. This last point is of considerable importance for it is on this assumption that statements such as those already quoted are based, to the effect that the anxiety neurosis of war is not directly due to the effects of fear but results from the battle within the individual. The symptoms of an anxiety neurosis are the symptoms of conflict; the one party to the conflict is the ego or personality; whether the other party is sex or fear the symptoms will be essentially the same. As has been seen the exponents of this theory are not always explicit as to the extent to which the scene of the conflict is confined to the unconscious, but incline to the belief that it is nearly all, or nearly always, unconscious so that the sufferer while aware of his symptoms is unaware of their cause.

This account of the psychopathological theory of anxiety neurosis is so brief that it cannot claim accuracy

in detail, but must serve for discussion in the present context. It is a theory which has been widely accepted, and is assumed by many writers on the subject to be entirely satisfactory. The validity of this theory however has been subject to serious criticism, some of which is aimed at the fundamental structure of psychopathology. Hart (1929), for example, has pointed out that the evidence upon which the psychopathological theory of neurosis is based is derived not from the patient's statements or admissions but from the psychoanalyst's interpretation of these statements, and that the psycho-analyst may be biased by the tenets of the school to which he belongs. Mapother (1933) considers the conception of specific instinctive forces as a means of evading rather than meeting problems of fact.

Psychopathological theory can offer no explanation of anxiety neurosis following cerebral injury or physical illness, except by assuming that such physical factors are not of primary importance and that the true cause is to be found by the experienced analyst in unconscious conflict. The answer to this is that the experienced analyst starting with this assumption may, by bringing to the attention of his subject conflicts which may exist in the mind of anyone, find in them a causal significance which does not in fact exist. With regard to the anxiety neurosis of war, when this appears in its simplest form as a state of fear immediately following exposure to intense or long stimulation, of fear-evoking quality, the psychopathologist is obliged by his theory, as we have seen, to postulate an intermediate stage in which fear enters into conflict with other emotional forces with consequent generation of another kind of fear. A simpler explanation of the observed facts if valid would be preferable.

The alternative theory of anxiety neurosis relates it to other varieties of affective disorder, for example elation or depression, the criterion of morbidity being the inadequacy of the circumstances when fully known to account for the degree or duration of the affect as judged by normal standards. According to this view, as we have observed, the affective disorder may be precipitated in persons with inherited liability by a variety of physical causes as well as by emotional stimulation. When the latter is causally operative there is not necessarily correspondence between the quality of affect aroused by the emotional stimulus, and the quality of the resulting affective disorder, but—

> "The nearest approach to a specific connection between the precipitating happening and the type of affective disorder is seen in the anxiety disorders which follow a terrifying experience such as exposure to shell fire" (Mapother and Lewis 1937).

It is obvious that terrifying experiences are much commoner in war than in peace. Therefore one would expect the anxiety neurosis of war to have its origin more often in terrifying experience than from any of the other possible causes.

It has been observed that this latter concept of the anxiety neurosis is descriptive and makes no attempt to explain the process whereby normal fear is transmuted into morbid fear. I have attempted (Symonds 1941) an explanation in physiological terms based upon the analogy of pain.

One of the objections which may be levelled at the hypothesis of the direct development of an anxiety neurosis from fear is that as the result of a terrifying experience fear very often does not appear immediately but after an interval, or if it does appear immediately it is of only mild degree and increases later. This is certainly true when the stimulus in relation to individual threshold is not of maximal intensity, and when other stimuli simultaneously evoke other types of affective response. In these circumstances, as I have argued elsewhere, fear may be completely or partially inhibited, to appear later in its full force when the stimuli responsible for its inhibition are no longer effective (Symonds 1943). When however the stimulus is of maximal intensity heedless flight is undoubtedly associated with intense fear. Immediate fear also results when the situation is such that there is nothing to arouse other types of affective response, when for example the individual is alone, without call of duty to others, and with no stimulus to manipulative activity. Other factors may also be taken into account, without the necessity of supposing emotional conflict. As I have already stated, the idea of danger either in reflection or anticipation may be a more potent stimulus to evoke fear than the actual presence of danger. The time factor here is important. When danger is sudden and transient only a part of the danger, sometimes only a small part, can be appreciated at the moment. Reflection gives time for fuller perception, with consequent increase of the stimulus. The same is true of anticipation. If there is time to study the picture of approaching danger in detail the total fear stimulus is greater than when it is seen momentarily and in part.

A second objection related to the first is that the state of morbid fear which is characteristic of anxiety neurosis only results from normal fear when there exists the possibility of conflict between fear and other emotions. But while it is true that in most situations in which fear is aroused the possibility of such a conflict does exist, there are striking exceptions. The example of panic flight has already been mentioned. This is a state often observed under conditions of war in which the sufferer is overwhelmed by fear to the exclusion of any other emotion as far as can be judged by his behaviour and subsequently from his own account of his feelings. The affective disturbance may persist long after his efforts have removed him far from danger. It may indeed persist for several weeks or months under conditions in which there is no longer any adequate cause for fear. It has been argued that such persistence of a morbid fear state following flight is due to conflict in so far as the wish to have behaved bravely has been frustrated by the wish to escape; but there are instances in which it is difficult to accept this explanation, the situation having been one in which no man could have been expected by himself or others to take any course other than flight. The state of morbid fear which develops following reflection upon a terrifying experience furnishes another example of a situation in which the materials for conflict may be absent. The sufferer may have behaved in a dangerous situation in such a way that he has no cause for self-reproach, and that situation may have been one which he will not have to encounter again, yet the state of fear persists.

The psychiatrist who assumes that the anxiety neurosis must invariably be due to emotional conflict will claim that its absence in cases such as those we have taken is only apparent, and will find for the patient's behaviour or his statements as interpretation which supports this assumption; but herein as we have observed may lie the weakness of his method and his claim. It is somewhat remarkable that for another type of affective disorder—depression—many psychiatrists are ready to admit the possibility of development of the morbid from the natural state as the result of excessive stimulation added to predisposition, but are unwilling to accept this possibility in the case of fear. Such a morbid state of depression they classify as endogenous, meaning by this that the catastrophe which has initiated the depressive state has acted as a spark to some inner store of tinder. If this is admitted for one type of affective disorder why should it not be admitted for another? An answer is it seems to be found in the definition of anxiety neurosis in terms of a set psychopathology.

There is possibly however a further explanation of the unreadiness of many psychiatrists to accept as simple an explanation of certain cases of anxiety neurosis as they are ready to admit in depression. In civil life conditions which will evoke intense depression are common: conditions which will evoke intense fear are rare. The development of a depressive state as the result of over-stimulation of the depressive affect occurs so often that it has been well recognised. Over-stimulation of the fear mechanism being uncommon has not been so well appreciated, though as the result of motor or flying accidents, shipwreck or earthquake examples do occur. The conditions of war are of course entirely different and it is noteworthy that psychiatrists with first-hand experience of war material have often expressed themselves in terms which admit the direct development of fear into anxiety neurosis. Dillon (1940), for example, states that 70% of the cases of war neurosis he observed in the field represented—

> "A direct anxiety or fear state characterised by generalised shaking, nervousness, jumpiness, and sometimes dizziness

and headache. . . . This was the commonest form of 'Shell-shock' the symptoms of which constitute the basic features of all forms of the neuroses of war."

THE RÔLE OF CONFLICT

There is then some warrant for the belief that an anxiety neurosis may develop as a direct result of over-stimulation of the fear mechanism, that this is a common occurrence in war, rare in civil life; and that emotional conflict is not essential for the causation of an anxiety neurosis whether in civil life or war any more than it is essential for the causation of other kinds of affective disorder, for example, depression. These views are by no means incompatible with the supposition that emotional conflict may be an important or common cause of neurosis, either alone or as a factor complicating other causes.

We are all aware from introspective experience that conflict between opposing emotions has an unpleasant affective quality of its own. The quality is difficult to describe. It is a feeling of tension, uneasiness or insecurity which is distinct from other affective states though it most nearly resembles fear. It is recognised as a natural part of the reaction to a situation or idea which evokes opposing emotions and though it is an unpleasant feeling it is up to a point beneficial in sharpening judgment. This variety of affect is generally called anxiety. It lasts normally as long as the emotional conflict exists. As a rule the conflict is resolved by some action or decision taken by the individual whereby one set of emotions is further excited and the other set inhibited. The affective state of anxiety then disappears. There are many normal situations however in which emotional conflict is continuous over long periods and anxiety in lesser or greater degree also continues. We may speak therefore of chronic anxiety as well as acute anxiety, using the word anxiety here in a specific and restricted sense meaning the affective state engendered by emotional conflict; and may regard acute or chronic anxiety as normal so long as the circumstances when fully known appear to justify its existence. We must also be prepared to admit considerable individual variation in the readiness with which anxiety is aroused, its intensity and its persistence, these variations depending as in the case of other types of affective response both on heredity and experience. If the emotional conflict is sufficiently intense or prolonged, or if individual sensitiveness in respect of anxiety is greater than the average, and especially if both factors operate together, a morbid state of anxiety may develop which as in the case of other affective disorder once it gets beyond a certain point will persist, despite the absence of adequate cause. That such morbid states occur is well recognised in clinical psychiatry, and they are at present generally included under the heading of anxiety states. They have been described also as states of agitation or tension. It is as reasonable to suppose that intense though normal anxiety of the kind that arises from emotional conflict may give rise to morbid anxiety as that intense sorrow may give rise to morbid depression, or intense fear to a morbid state of fear.

CONFLICT NEUROSIS AND FEAR NEUROSIS

We have now reached a point in the discussion at which it is evident that we must distinguish in name as we have already distinguished in quality between a neurosis of conflict and a neurosis of fear. Hitherto we have followed custom in including both under the title of anxiety neurosis. Our argument for subdivision is, as we have already indicated, that the affective state associated with emotional conflict has qualities of its own as distinct from fear. The affect of conflict and the affect of fear are separable and corresponding with these two affects we may recognise two types of affective disorder, a conflict neurosis and a fear neurosis. The latter we have already considered as a typical affective disorder which may result from a variety of causes—inherited, physical and psychical. The conflict neurosis may be regarded in the same light. Among the patients customarily regarded as suffering from an anxiety neurosis, there are many whose major complaint is neither of fear nor depression, but of uncertainty, indecision, tension and restlessness, without adequate cause. In its most severe form this kind of affective disorder may be classified as psychotic and has been described as depression with tension (Muncie 1934). A conflict or tension state of this kind is most apt to develop in persons predisposed by heredity either to this or some other form of affective disorder: it may be precipitated by physical or psychical causes, or by a combination of both. When psychical causes are operative they are usually to be found in the form of intense or long-continued emotional conflict. The sufferer from a conflict neurosis like the sufferer from a fear neurosis is in consequence of his illness more easily disturbed by appropriate stimuli which are in this case such as simultaneously excite opposing emotions.

Of the two neuroses into which we have thus subdivided the anxiety neurosis the conflict neurosis is by far the commoner in civil life because occasions for emotional conflict are common and occasions of intense or prolonged fear are rare. Moreover one of the commonest emotional conflicts under conditions of peace is that between sexual and other emotions. Hence when psychical factors are a cause of conflict neurosis frustrated sexual desire is quite commonly found in the background. Herein probably lies the foundation of Freud's original conception of the anxiety neurosis as resulting from frustration of the libido. Under conditions of war not only is the fear neurosis much commoner than in peace, but the conflict neurosis, which is equally common, is usually derived from a conflict between fear and other emotions, instead of sex and other emotions.

We have so far considered the fear neurosis or the conflict neurosis as if each existed in a pure state, uncomplicated by the admixture of any other type of affective disorder. It is however a commonplace of clinical psychiatry that most affective disorders are mixed states. Under conditions of war there is especial opportunity for admixture of the affects of fear and conflict and out of this may arise various combinations. Normal fear versus other emotions may lead to a conflict neurosis in which, so long as the dangerous situation persists, the affect of fear is also present. A fear neurosis so long as other and opposite emotions are present to contend with it will be attended by the affect of conflict, or fear neurosis and conflict neurosis may coexist, both affective states existing or persisting in circumstances which do not justify their existence. Such distinctions may appear somewhat academic, for in practice it is often extremely difficult in the analysis of a mixed state of fear and conflict to decide whether one or the other or both are morbid as opposed to natural. I believe, however, that the distinction which I have supposed to exist between the affective states of fear and conflict deserves emphasis for it provides an explanation of a divergence of opinion as to the nature and causation of the anxiety neuroses of war which has been responsible for a good deal of confusion. For this reason, if for no other, fear neurosis and conflict neurosis might well be employed to supplant the term anxiety neurosis, which like other psychiatric labels in the past has acquired so many different connotations that it has become a hindrance rather than a help to clear thinking.

DEVELOPMENT OF WAR NEUROSIS

Making use of the distinction and the terms which have been suggested, I shall now trace in outline the development and symptoms of the common types of war neurosis. It is necessary in the first place to reassert that fear is a state which is natural, especially in such circumstances of extreme, continued or repeated danger as exist in war. The ease with which fear is aroused however, and its intensity and duration, will depend upon factors other than the intensity or duration of the stimulus. These factors comprise the innate sensitiveness of the individual and the sensitiveness or insensitiveness acquired as the result of conditioning and experience. Such sensitiveness whether innate or acquired may be specific for certain kinds of danger. The affective state of conflict when fear exists is equally natural under most circumstances, for danger in war as a rule excites affects other than fear—rage, sense of duty to others, regard for one's own reputation. If these inhibit fear—i.e., prevent the appearance of fear—or if fear inhibits the opposing set of affective stimuli, there is no conflict; but if both

fear and opposing affects are aroused, a state of conflict must exist.

Upon these assumptions let us base an imaginary sketch of the mental state of a healthy minded person under stress of war. He first experiences fear at a stage in his military career before he is ever exposed to danger, fear lest he may be afraid and be found wanting in comparison with his comrades under an ordeal which is generally considered to be the crucial test of manhood. When confronted with the actual ordeal he experiences another kind of fear which is met by his desire to play his part well and support his comrades. Therein lies conflict. With repeated exposure to danger he becomes conditioned or seasoned by experience so that he acquires some degree of fearlessness. Stimuli which at first aroused fear are now inhibited, and conflict is less. With greater experience there is an increasing chance that intense or repeated excitation will overcome inhibition, or that fatigue, illness or injury may impair the inhibitory state. Fear and conflict therefore return and tend to increase if the experience of danger is continuous. With removal from danger the affective state returns to normal, though there may be an initial phase of increased fear owing to the removal of inhibition. When the time comes for facing danger again there is anticipatory fear based this time upon past experience of the affective distress of immediate fear and conflict. This fluctuating state of fear and conflict may continue indefinitely, with relief from the unpleasant affective disturbance when there is removal from danger. If this be so it may be said that fear and conflict are present only when there is adequate cause.

The development of a fear neurosis may be outlined thus. As a result of over-stimulation—to which individual sensitiveness as well as strength or duration of external stimulus may contribute—a state of fear is generated which persists even when the sufferer is removed from danger, and is further excited by stimuli which would previously not have aroused fear at all. His mind is haunted by fear when he is in circumstances of peace and quietness: he is frightened of traffic or of sudden noises. Whether there is conflict, or if there is, how much, will depend upon the morale of the individual—that is upon his ideals of duty and self-respect. In some persons there is no conflict—fear is naked and unashamed. This is the uncomplicated fear neurosis, but except as the immediate result of some intense and overwhelming danger it is uncommon. As a rule the sufferer from a fear neurosis is inclined to be ashamed of his fears and to combat them, so that added to the state of fear is that of conflict. If individual morale is high the state of conflict develops to a pitch at which overstimulation results in a continued state of tension and unrest so that though the sufferer is assured by his fellows and by the doctor that there is no justification for his self-criticism and accepts these assurances with his reason the feeling of conflict persists. This combination of fear and conflict neurosis is one of the commonest types encountered among men of good morale.

In other cases the repeated arousal of conflict by intermittent fear may lead to a continuous state of that affective state of tension, that feeling of being keyed up to fight against oneself, which is characteristic of conflict, even when fear is absent. Though he is removed from danger and there is neither cause for, nor feeling of, fear the sense of conflict remains and continues. This is the uncomplicated conflict neurosis which again is uncommon by comparison with mixed forms. The admixture of fear and conflict as component affects of the anxiety neurosis of course does not exclude others such as depression. In practice the affective neurosis is nearly always a mixed state.

CRITERIA OF WAR NEUROSIS

We have so far made no further attempt to define the boundary which is presumed to exist between anxiety neurosis and health—that is to say, between affective disorder and normal affect—than the statement that an affective state which appears to be unjustified by the circumstances in which it is present is to be considered morbid, and therefore evidence of neurosis. We have qualified this statement with the remark that these circumstances must be fully known to the observer before he is able to make the distinction. The qualification is obviously important; for the causes of what may eventually be considered a natural degree or persistence of affective disturbance are often not superficially apparent. The final criterion however is that which relates the affective disturbance observed to what might be expected of the "average" person in similar circumstances. This dividing line is relative and subject to variation. For example, if in peace-time a civilian passenger was involved in an air crash in which he himself was injured and a friend was killed, a persistent fear of flying might be judged normal; but under conditions of war there is sustained excitation of other affects which tend in the normal person to inhibit fear, so that in a member of aircrew who had had such an experience as we have described persistent fear might be regarded as abnormal. But if the squadron morale happened at the time to be relatively low the airman would be more vulnerable and persistent fear might be regarded as normal. It appears then that the dividing line between neurosis and normal affect is arbitrary depending upon the current estimate of how intense or persistent affective disturbance should be in the normal person under given circumstances.

A further question to be discussed is the importance, as a criterion of neurosis, of unawareness in the individual of the nature, or causes, of his affective disturbance. We have noted that the psychopathological theory of anxiety neurosis lays considerable stress on the origin of the affective disturbance in the unconscious. According to this theory it is chiefly because certain feelings and thoughts are repressed and kept out of consciousness that they are potent for harm. When they are brought into consciousness most of their power is lost. In the anxiety neurosis of war the feeling of fear and the desire for escape together with the memories and thoughts associated with this feeling and desire constitute a constellation or complex which, existing in the unconscious, is at war with the rest of the personality. It is this secret battle within the mind which is the essential cause of the neurosis. Psychiatrists of another school are more elastic in their views.

Thus Mapother and Lewis (1937) write: "Consciousness . . . is only an attribute of mental happenings, not their essence or criterion; mental life goes on with various degrees of consciousness attaching to it. There is no sharp division between conscious and unconscious mental life: no region called 'the unconscious' with its own rules and contents. Many of the psychological happenings most significant for psychiatry go on without clear consciousness of them, but in appropriate conditions they may be accompanied by much more, or by full consciousness."

If we take the latter point of view we shall regard the question whether the individual is aware of the nature or causes of his affective disorder as of little value as a criterion of its morbidity, since unawareness of much that is happening in the mind is a natural feature of mental life. A man may be sad, frightened or happy without being fully aware of his state of feeling or the events which have led up to it, and this may be considered normal. This does not mean however that self-deception and repression may not at times play an important part in the symptomatology of affective disorder.

An affect must be felt before it can exist. There can therefore be no such thing as unconscious affect, but a man may nevertheless be unaware of the nature of affect within himself. This is a commonplace in war when the admission of fear is so unwelcome that the very word is excluded from the vocabulary of the soldier, though he may allow himself to speak of "wind up," a term which also includes the uneasiness of conflict between fear and other emotions. Such unawareness cannot, per se, be regarded as morbid, nor when fear or conflict have developed into neurosis can unawareness of nature or cause be regarded as an essential feature of the neurosis. Individuals may be more or less aware of the true character of affective disorder as of normal affect, and the degree of awareness may depend upon many different factors including intelligence, capacity for introspection and previous experience, as well as reluctance to face unpleasant facts. Of two men suffering the distress of a persistent and morbid fear with the bodily disturbances usually associated with it, one may com-

plain that he fells ill, has palpitation and indigestion and does not know what is wrong with him: the other may come to the doctor complaining that he is in a constant state of fear. Both may be making an equal effort to persist in the face of danger despite their neurosis, with resultant symptoms of conflict. One will add to his complaint of feeling ill, that of being restless, tense and irritable, again submitting these sensations as part of an illness which he does not understand, the other will admit that the effort to control his omnipresent fear has resulted in a state of tension which is unbearable. Both men are suffering from neurosis. The one is aware of its nature and causes, the other is not. The presence or absence of awareness nevertheless has an important bearing on the form and further development of the neurosis. The man who lacks awareness is likely by a further process of self-deception to find in symptoms which are presented to himself and others as those of bodily illness, a means of escape from the situation which has in fact been the cause of his neurosis, and is now aggravating it. For the man with awareness there is no such means of escape. Consequently neurosis is aggravated by more prolonged stimulation of the affective mechanisms concerned, reaches a more severe degree and is less amenable to treatment. Awareness therefore is for the individual at the same time an advantage and a disadvantage. It protects him from hysteria, but renders him liable to more protracted and more severe states of fear and conflict.

SUMMARY

Anxiety neurosis in flying personnel and in troops in the battle zone generally arises from fear. There are two different views of the process by which the neurosis develops. One supposes that there is a conflict between fear and other emotions, of which the sufferer is generally unconscious, and that the affective disturbance results from frustrated instinctive desire. Another view is that over-stimulation of the fear mechanism can result in a persistent and morbid state of fear. The arguments for and against each of these hypotheses are reviewed.

It is suggested that the anxiety neurosis of war includes two kinds of affective disorder. The dominant affect in one is fear and in the other a state of tension associated with emotional conflict. Either affective disorder may occur alone though generally they occur together.

The distinction between anxiety neurosis and normal affective reaction is discussed in relation to flying and combatant duties, and it is concluded that this distinction is relative and subject to variation.

The importance as a criterion of anxiety neurosis of unawareness in the individual of the nature and causes of the affective disorder from which he suffers is discussed and it is concluded that lack of awareness is not an essential feature of the neurosis, though it may in certain respects influence its pattern and prognosis.

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CLINICAL STUDY OF AN OUTBREAK OF INFLUENZA B

DURING THE WINTER, 1942–43

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BETWEEN November, 1942, and the end of February, 1943, an epidemic of influenza B was investigated in certain military units. This paper records the clinical data (see also Stuart-Harris, Glover and Mills 1943).

In one of the units notes were made on 42 cases, 31 of which were studied by one of us (J. M. S.), 7 by Lieut.-A. B. Kinnier Wilson, RAMC, and 4 by Major T. M. A. Lewis, RAMC. All the patients had been admitted to camp reception stations with fever and acute respiratory infections, although not all were thought to be cases typical of influenza. By courtesy of Major R. S. Muckenfuss, USAMC, records of 25 patients admitted to the 1st Medical General Laboratory of the US Army, and suffering from influenza-like illnesses, were also available.

Hirst serum tests were made on both acute and convalescent sera of all these patients and according to the rise of antibody to influenza B they may be placed in three categories:—

1. *Significant rise of antibody* (*4-fold or greater*)

24 from reception stations, 11 from American hospital } Influenza B.

2. *No rise of antibody*

14 from reception stations, 12 from American hospital { 3 diagnosed clinically as atypical pneumonia. 23 influenza Y (undetermined ætiology).

3. *Doubtful rise of antibody* (*2–3 fold*)

4 from reception stations, 2 from American hospital } Unclassified.

Sera from all cases in categories 2 and 3, and from 6 cases in category 1 were also tested against virus A, but no significant rise in antibodies was detected. The term influenza Y (Rickard et al. 1941) was given as a matter of convenience to the group of cases of clinical influenza whose ætiology remained undetermined by the serological methods employed.

The symptoms of the camp reception station cases were recorded in sufficient detail for comparison of influenza B and Y groups with each other and with 60 collected cases of influenza A (Stuart-Harris 1941). The table indicates that the three groups differed little clinically. This agrees with the opinions of the clinical observers, who could not differentiate between them.

SYMPTOMS AND SIGNS COMPARED

	1942–43		1937–41
—	Influenza B (24 cases)	Influenza Y (12 cases)	Influenza A (60 cases)
ONSET (%)			
Sudden	78	100	75
Premonitory symptoms	39	9	18
SYMPTOMS (%)			
(*a*) *Constitutional*—			
Sweating	91	58	17
Headache	83	100	85
Shivering	82	83	80
Malaise	80	100	87
Anorexia	79	91	71
Muscular pains	75	66	60
Giddiness	58	55	32
Nausea or vomiting	29	33	17
Photophobia	14	8	20
Insomnia	12	0	38
Fainting	7	0	5
(*b*) *Respiratory*—			
Cough	92	58	88
Coryza or nasal obstruction	66	58	80
Sore throat	42	50	48
Substernal chest pain	33	17	11
Sputum	24	54	31
Hoarse voice	12	8	10
Other chest pain	9	19	0
Epistaxis	0	0	8
FEVER			
Average length	3 days	2·85 days	3 days
Secondary rise (diphasic curve)	46%	0%	21%
Average maximum temperature	100·8°F.	102·5°F.	101·2°F.
ABNORMAL SIGNS IN CHEST	18%	33%	35%

The records from the American hospital showed general agreement with the other cases studied as far as symptoms were concerned. An important difference was the inclusion of a number of afebrile patients (who were all negative serologically) so that the average duration of

fever in the influenza Y group was only one day after admission to hospital, compared with two days for influenza B. The cases at the American hospital probably represented a truer sample of the current respiratory infections than did the febrile patients in the camp reception stations.

In addition to clinical data, X-ray findings were available in 20 cases, and leucocyte counts in all 25 cases in the American hospital.

The chest skiagrams of 8 of the patients with influenza B taken at various stages from the 2nd to the 7th day were normal; one other showed doubtfully significant increase in hilum shadows on the left side during the fever. In the influenza Y group skiagrams taken from the 2nd to the 11th day were normal in 8, and indicated pleuritis of the right base in one. One other patient at the American hospital with negative serological findings had lung changes suggestive of atypical pneumonia, and 2 in the camp reception station group were similarly diagnosed on clinical and radiological grounds.

The importance of the radiological findings in true influenza B was that atypical pneumonia had occurred sporadically among British troops in the area during the previous nine months, and the disease was also prevalent among American troops in an adjacent locality. Chest complications were singularly infrequent in cases from all areas during the period of influenza prevalence.

Leucocyte counts, on admission, varied from 3400 to 10,000 per c.mm. in the cases of influenza B, and from 3300 to 12,000 in influenza Y. Differential leucocyte counts were also insufficiently deviated for diagnostic purposes.

DISCUSSION

Nigg et al. (1942) describe an influenza-like epidemic in a mental hospital during May, 1939, which was subsequently found to be due to influenza virus B. They compare its clinical features with those of influenza A occurring earlier in the same year and note that influenza B differed from A in that coryza was commoner and generalised aching less common, while the average temperature of the B group tended to be a little lower. White-cell counts were about the same for both. The unreliability of mental patients as regards symptoms made it difficult to determine the significance of the clinical differences, but in any case they were not clear enough to afford means of separation.

In our series influenza B differed little from influenza A either in general aching or incidence of coryza, although the average maximum temperature was slightly lower. We too concluded that clinically the two groups were indistinguishable.

Taylor et al. (1942) compare 23 cases of influenza B seen in the Argentine during 1941 with a group of influenza A cases in the previous year. They believed influenza A to be somewhat more severe and more uniform in symptomatology than B. Generalised symptoms were more persistent, and sweating, body pains, expectoration and inflammation of the eyes and throat were noted more often in the A group. We were unable to demonstrate such a difference.

SUMMARY

A group of 24 cases of influenza B (proved by serological tests) is compared with a group of 12 clinically similar cases occurring in the same outbreak but showing no rise in antibody to either A or B virus (classified as influenza Y), and also with a collected series of 60 cases of influenza A. Little difference is apparent between the three groups.

The clinical findings were in general agreement with those in cases admitted to an American army hospital, whose chest skiagrams, leucocyte counts and differential counts were not diagnostically significant.

Influenza A and influenza B appear to be clinically indistinguishable in the individual patient.

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INFLUENZA IN BRITAIN, 1942–43

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THE changing character of recent influenza epidemics was discussed in a previous paper (Andrewes et al. 1941). As a four-year cycle had prevailed in England since 1929, it was anticipated that 1941 might be a peak period; nevertheless, the outbreaks that winter were relatively mild. Laboratory studies indicated that much of the sporadic clinical influenza during January, 1941, was due to influenza A virus, but ferrets were less readily infected than in earlier outbreaks and the viruses recovered were not easily adapted to mice. It was confirmed that testing of acute and convalescent human sera for neutralising antibodies is a more delicate index of infection than ferret inoculation.

During the winter and spring of 1941–42 and 1942–43 a study of influenza has been continued.

PERIOD 1941–42

During this season there were neither localised nor spreading epidemics, but fairly numerous sporadic cases, diagnosed clinically as influenza, were encountered.

The tests made by one of us (C. H. S.-H.) and by the late Miss Dora Lush, consisted in attempts to infect chick embryos with filtered garglings and in estimations of the serum inhibition titres to influenza virus agglutinin for the red cells of the fowl (Hirst 1942), both during the febrile stage of the disease and 7 to 10 days later, during convalescence (Stuart-Harris 1943). The Hirst tests were carried out with small batches of virus fluid prepared from time to time as embryos were available, and an unavoidable variation was thus introduced by the employment of different virus fluids. The importance of comparing the inhibitory power of the two sera from one individual against the same virus fluid and the same fowl red cells on the same day has been emphasised (Stuart-Harris 1943).

Serum tests made on 52 sporadic cases of influenza and also of atypical pneumonia in the winter of 1941–42 yielded entirely negative results; a few garglings received from military units were tested on ferrets also with negative results. It was thus confirmed that no influenza virus infection of a known type was current during this season.

PERIOD 1942–43

Epidemiology.—During the winter 1942–43 an investigation of acute respiratory infections was carried out in two divisions in which cases were officially notified (Stansfeld et al. 1943). In division B the notifications were subdivided into febrile and afebrile, but in division A they included all cases of colds, sore throats, pharyngitis, tonsillitis, influenza, bronchitis and pneumonia, whether febrile or not. The incidence of respiratory infection was low in both divisions, even during January when a sharp rise took place and for a fortnight there was a mild outbreak in most of the units. Some regiments, however, had merely sporadic cases of influenza such as are seen regularly at this time of year. The notifications in division B during January indicated a much greater proportional increase in febrile than in afebrile cases.

Clinical and laboratory investigations.—During the entire period in division A, and from January to March in division B, tests were made on garglings and sera collected from cases of upper respiratory tract infections. A few specimens were also received from civil or military patients in other areas, including patients admitted to the 1st Medical General Laboratory of the US Army. Tests were made in all upon 15 individuals most of whom suffered from attacks of clinical influenza of varying severity. A few were selected for study for special reasons, such as clinical resemblance to atypical pneumonia (2 patients in November) or lack of febrile reaction (4 patients in January), and so far as possible febrile patients from division A were studied irrespective of symptoms. Sera from 4 cases diagnosed as "gastric influenza" were examined in April.

In contrast to the previous season when no significant rise in antibody was detected by the Hirst test, differences in titre between acute and convalescent sera were noted. From the middle of December, 1942, until the middle of February, 1943, a proportion of the cases upon which serum tests were made showed an increase in antibody to influenza virus B, but not to influenza A.

The entire series of tests in 1942–43 were made with reconstituted dried allantoic fluid kindly made available by Dr. G. K. Hirst of the International Health Division of the Rockefeller Foundation, New York. Early in 1943 Hirst's new technique (1942) was adopted using 0·5 c.cm. quantities of serum and virus and red-cell standards from 0·25% to 0·87%. The period of sedimentation was increased from 60 to 75 minutes. As many different batches of fowl red cells as possible were employed during the tests in order to minimise in the final results, the influence of individual fowl cells, which had been found to have an effect on the actual inhibitory power of a serum against virus B but not against virus A. The simultaneous test of the two sera from each patient with the same reagents also reduced variation in the results from technical causes.

In each test standard sera were used—namely, a hyperimmune rabbit serum for B tests and two pools of human sera (1941) for A tests. In 22 out of 25 tests of the B serum against the homologous virus the readings were between 1/128 and 1/256: the other 3 were 1/64, 1/96 and 1/320. The 14 tests of the human pool sera versus A ranged from 1/64 to 1/160.

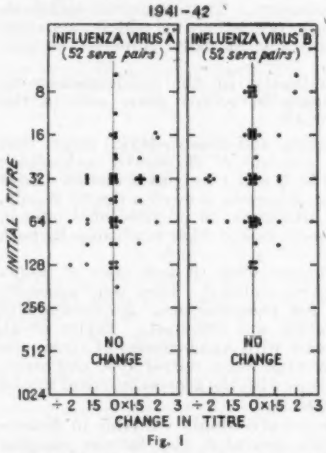

Fig. 1

Fig. 1 shows the results of the Hirst test on 52 pairs of sera from 1941–42, difference of titre of the two members of each pair being plotted against the titre of the first serum collected during the fever. Most of the pairs of sera showed no change in titre with either virus A or B; a few showed a decrease, and a few an increase in titre not exceeding 2-fold, against either virus. Hirst has stated that a 4-fold increase indicates influenza virus infection; so the results with these sera were, by his standards, negative.

Fig. 2 shows the results, similarly plotted, of tests with virus B on 114 sera from 1942–43, 78 of which were also tested against virus A. Of these 114, 52 showed either no change, a decrease in titre, or an increase not exceeding 1½-fold; 12 showed a 2-fold or 3-fold increase, and 50 showed an increase 4-fold or greater. The sera of all 52 in the first category, of 11 in the second category, and 15 which exhibited 4-fold or greater increases to virus B, were tested against virus A. Only 2 pairs of sera exhibited differences in titre with virus A in excess of three times—namely, 4-fold and 5-fold increases; the majority showed no change, and the sera which were placed in various categories by the tests against virus B showed no such differences with virus A. These results were interpreted as indicating infection with influenza virus B in 50 patients.

Fig. 2 also shows that the rise of B antibodies in individual patients was correlated with the initial titre of the serum, so that patients with low initial levels of antibody (8–32) more often showed increases in antibody than did those with high initial levels (128–512).

For 16 pairs of sera the results of the Hirst test were checked by neutralisation tests in mice; the sera included specimens in which the rise was considerable and others in which it was small. The results were plotted graphically as by Hirst (1942). Correlation was good, though not quite so close as in Hirst's results with influenza A virus; this is doubtless largely accounted for by the variable introduced into the

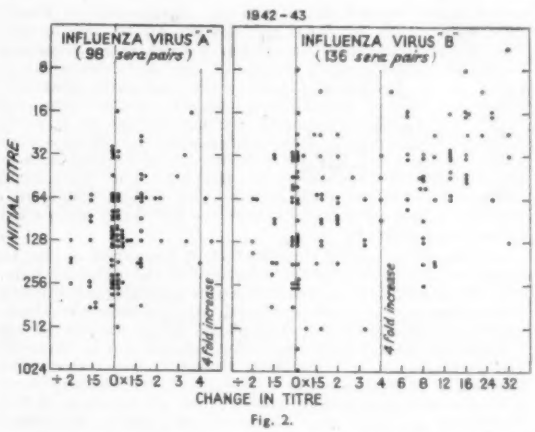

Fig. 2.

tests with B virus by the unavoidable use of cells from different fowls.

Towards the end of the normal influenza season and after it, there were a number of small outbreaks apparently due to influenza A. Two of three sporadic cases of influenza arising towards the end of March in a single unit of division B showed increases of antibody to influenza A but not to B. This unit was disbanded five days later, so further observations were impossible From a localised outbreak in East Anglia in March, 1943, ten sera were examined—2 pairs (acute and convalescent) and 6 single (convalescent) specimens. The paired sera showed in one case a definite (×8), in the other a doubtfully significant rise of titre against A, but none against B: one of the single specimens showed so high an anti-A titre (1/512) as to suggest a recent A infection. From an outbreak on an RAF station, also in East Anglia, in May, 1943, 7 pairs of sera were obtained; none showed any rise against B but 4 showed a rise against virus A (×6 to ×16). Finally pairs of sera from a local outbreak in Scotland in June, 1943, showed in 4 instances a significant rise and in 2 a trivial (×2 to ×3) rise against virus A; again there was no evidence of B infection.

Attempts were made to recover, by means of egg inoculations, strains of influenza virus from the garglings of patients who did, or did not, show increases in B antibody as a result of their infection. Garglings were not available from the cases of influenza A, but those from 21 cases were tested, of which 11 were from patients diagnosed as influenza B on serological grounds. The garglings were filtered and inoculated amniotically into 12-day chick embryos, and passage from chick to chick was carried out 1–14 (usually 3) times. No virus was recovered by this procedure; the extra-embryonic fluids of the inoculated eggs never acquired the power to agglutinate fowl red cells, nor did they (11 samples) produce lesions in mouse lungs, even on passage, or (6 samples) infect ferrets.

Ferrets.—Garglings from 26 patients were inoculated into ferrets between January and April, 1943. Of these, 7 came from the military units mentioned above, 2 from the Eastern counties and the rest from the London area: if circumstances did not permit immediate inoculation they were stored in CO_2 alcohol at −76° C. for a few days.

The garglings were administered intranasally to ferrets in the usual manner under ether anæthesia. The results were at first sight completely negative since no recognisable clinical symptoms with typical fever were detected. As the number of ferrets was insufficient to permit "blind" serial passages as carried out in previous years, we decided to apply the Hirst test to the sera of "convalescent" ferrets to determine whether antibodies against either A or B virus had developed.

The general plan was to inoculate two ferrets with the original material. One of the pair was killed at the 4th or 5th day and a centrifuged suspension of lung and turbinate in 10% serum broth was frozen in CO_2 alcohol. The second ferret was bled about 14 days after inoculation and the serum

tested against both A and B viruses. Preinoculation bleedings were taken in some but not in all of the ferrets. The inhibitory action of normal ferret serum varies according to the particular sample or pool of fowl red cells which is being used. Preliminary tests have indicated that the inhibitory titre of normal serum usually ranged from 1/32 to 1/128 but that occasionally readings as high as 1/142 to 1/256 are encountered. Antibodies against A or B virus were judged to have developed if the titres of the serum 14 days after inoculation was above the upper level of the normal range. If the serum of the second ferret showed a high antibody level, the stored material from the first ferret was passed to two more animals.

Of the 27 samples thus tested, 3 provoked a rise in temperature to over 104° C in one of the original pair, but it is doubtful if the reactions were specific for influenza since passage of suitable material failed to induce a febrile response. Recognisable symptoms were absent in all ferrets inoculated with original garglings and in those in the passage series. No gross changes were found post mortem: sometimes the turbinates were slightly congested and moister than normal, but no increase in the turbinate reaction was observed on passage to other ferrets.

In 19 instances the sample of convalescent serum from the ferret inoculated with the original material failed to show any appreciable increase in A or B antibody, but in the remaining 8 there was a 4–16-fold increase in antibody against B virus, (2, ×4; 1, ×6; 2, ×8; 1, ×12; 2, ×16). In passage ferrets, a significant rise in antibody was detected in animals after 1, 1, 2, 2, 2, 3, 3 and 6 passages respectively. The specificity of the antibody in the ferret sera was confirmed in 5 instances by neutralisation tests in mice, in which suitable serial dilutions of ferret serum were mixed with mouse-lung filtrate (B. virus, Lee strain).

We gained the impression from these studies that a virus serologically indistinguishable from B was being transmitted through the ferret. It was insufficiently active to provoke a febrile response or to establish clinical symptoms, but was capable of stimulating antibody production. Dr. Himmelweit (1943) was more successful than we were; he passed a strain through ferrets, and after 15 passages induced it to infect chick embryos. He kindly sent us some of his material which we found to be influenza B by the Hirst test.

The two samples from the Eastern Counties did not infect ferrets, and tests of their sera were negative although an appreciable rise in A antibody in the convalescent sera from these patients was detected by the Hirst test.

The table summarises the results of the serological tests in 1942–43, showing the proportion which gave positive results amongst (*a*) the human sera, (*b*) the ferret sera. It will be seen that comparison between sera

REACTION TO HIRST TEST (B VIRUS)

Garglings tested	SERA			
	Human + Ferret +	Human − Ferret −	Human + Ferret −	Human − Ferret +
21	6	7	8	0

from human cases and sera from ferrets inoculated with the corresponding garglings was possible in 21 instances. In 7, human and ferret sera were negative; in 6, both were positive; in the remaining 8, the human sera were positive, the ferret sample negative.

Suspensions of ferret turbinates and lungs from the most promising cases were inoculated intranasally into mice without result. In 2 instances the tissues from ferrets inoculated with garglings were used, while the third-pass material was used in one case and the fifth-pass in another. Two of these strains were passed six times, one three times, and one twice, through mice in series, but no evidence of B infection was detected although in one instance the survivors from a group inoculated primarily with ferret tissue were subsequently proved to be immune to B virus.

In general the results, though disappointing, confirm the serological results on the human patients, and they emphasise the great difficulty in establishing strains of influenza B in animals. The lack of infectivity of filtered garglings for the chick embryo is not altogether surprising in view of the low percentage of positive results obtained in this country in 1941 with garglings from cases of influenza A.

DISCUSSION

Recent serological tests (Lush, Stuart-Harris and Andrewes 1941) showed that a considerable proportion of cases of influenza towards the end of the 1939 season were due to B virus. This was the first record of the existence of this strain in the British Isles. In 1940–41 there were mild epidemics, some of which were due to A virus (Andrewes et al. 1941), but no evidence of B virus was found. During the early months of 1942 there were no widespread epidemics, no viruses pathogenic for ferrets were isolated, and no serological evidence of antibody rises against viruses A or B was obtained. Towards the end of the year, however, and again in January and February, 1943, a mild increase of acute respiratory infections, with a small peak in January, was associated with serological evidence of influenza virus B infection. The illnesses were clinically typical of influenza, but some other respiratory infection which did not evoke serological changes for known influenza viruses was prevalent at the same time; many of these cases were afebrile, but some were febrile and could not be differentiated clinically from influenza B. Subsequently (March to June) the type changed and several minor outbreaks of influenza A infection developed in different parts of the country. They remained localised, however, and although occurring in widely separate areas, showed no tendency at this time to assume epidemic proportions.

There is some similarity in the epidemiology of influenza in this country in recent years and in the Argentine during 1940–42.

Taylor, Parodi, Fernandez and Chialvo (1942) report that in 1940–41, 22 human sera out of 26 showed neutralising antibodies to A virus, 1 to B and 1 to both A and B. After the epidemic had passed, 3 persons showed a rise to B only, but probably a mild B attack was in progress since later in the year a number of sera showed high antibodies to both A and B.

In 1941–42 both influenza virus B and cases of undetermined ætiology were encountered. They were generally mild and gave rise to few complications. No evidence of influenza A virus infection was obtained. Taylor et al. remark on the relative ease with which strains of virus were isolated from throat washings taken during 1940 and transmitted to ferrets, in contrast with the general failure of similar efforts with 1941 material.

The Hirst technique is exceedingly valuable in detecting virus B outbreaks, provided the factors causing variation in the inhibition titres of any particular serum are fully recognised and suitable precautions are taken against false readings (Stuart-Harris 1943). Like Taylor et al., we have found it useful to instil garglings into ferrets and examine the serum by the Hirst technique for antibody rise. In a proportion of cases in which the convalescent serum of the human patient showed a significant rise against virus B, the ferret serum was also positive. Serial passages through ferrets may also induce a rise in antibody although no overt symptoms of infection can be recognised. So far we have not isolated a B strain from garglings, either by ferret or mouse passage experiments or by the inoculation of the amniotic or allantoic cavities of developing eggs. Himmelweit (1943), however, has isolated from a fatal case of influenzal pneumonia a strain which closely resembles, though it is not identical with, the B strain (Lee), and he succeeded in infecting ferrets and chick embryos.

Taylor shows that in the Argentine a relatively widespread epidemic of influenza A—explosive in character but disappearing quite rapidly—was associated with or followed by an influenza B outbreak. In the following year sporadic influenza with no peaking was apparently due to influenza B and to an unidentified agent. In this country the reverse appears to have happened: a mild epidemic caused by B virus in association with unknown agents was followed by outbreaks due to A virus. At the time of these observations (June, 1943) the question suggested itself, "Will the change in type result in a widespread epidemic?" At first there was

no apparent increase in the distribution and severity of outbreaks, but since November, 1943, influenza has appeared in epidemic form and preliminary tests at the National Institute for Medical Research have shown that A virus is the predominant type.

SUMMARY

1. Early in 1942 examination of convalescent sera by the Hirst technique, and transmission of garglings to ferrets and developing eggs, failed to reveal any evidence that the mild influenza outbreaks then occurring were due to influenza viruses A or B.

2. A mild increase in the incidence of acute respiratory infections early in 1943 was associated with serological evidence of influenza B virus infection. Later in the season (March to June) small scattered outbreaks of A virus infection were encountered.

3. The value and the limitations of the Hirst test are discussed.

We extend our grateful thanks to numerous doctors, both Service and civilian, and especially to the 1st Medical General Laboratory, APO 519, US Army, for unfailing help in facilitating this investigation. We are especially indebted to Dr. C. H. Andrewes, FRS, for advice and assistance in preparing our report.

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INFLUENZA VIRUS B
ISOLATED FROM A FATAL CASE OF PNEUMONIA

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SINCE the first isolation of a virus from patients suffering from epidemic influenza by Smith, Andrewes and Laidlaw (1933) it has been shown that at least two distinct antigenic types of influenza virus exist. Francis (1940) and Magill (1940) discovered in America strains now known as influenza virus B. They have no immunological relation to the original strain or to others subsequently isolated and grouped together as influenza virus A.

Serological evidence of virus B infections in this country has been obtained by Lush, Stuart-Harris and Andrewes (1941) and by Stuart-Harris, Glover and Mills (1943). Attempts to isolate a virus from garglings of patients have, however, hitherto proved ineffective. Through the kindness of Prof. W. D. Newcomb, to whom I am also indebted for a description of the post-mortem findings, I have had access to a fatal case of influenza from which I recovered a virus closely related to the B strain (Lee) isolated by Francis.

CASE-HISTORY AND POST-MORTEM FINDINGS

The patient, a man aged 55, fell ill on Feb. 8, 1943, and thought he had influenza. Next day he was much worse, with precordial pain and pyrexia, and in the evening he had a hæmoptysis (about ½ pint). He became semi-conscious, and on Feb. 10 was admitted to St. Mary's Hospital, moribund. He died before being clinically examined. The following were the findings at autopsy on Feb. 11 :—

Respiratory system.—Dark altered blood exuded from the nose. The larynx and trachea were rough and reddened; thin, grey, friable membrane in patches on cartilages gave a banded appearance to the inner surface. There was much frothy bloodstained fluid in the trachea and bronchi. Both pleural cavities also contained bloodstained fluid. The lungs were dark and heavy; there was no fibrin on the surface, and they showed bloodstained œdema with patchy peribronchial consolidation.

Microscopically it was found that all the surface epithelium of the trachea was shed; there was little fibrin on the surface and there were masses of staphylococci, but few leucocytes. The epithelium of the bronchi was also shed. The lungs showed patchy bronchopneumonia, necrosis near brochioles, much hæmorrhage, and many staphylococci.

Other findings.—Cloudy swelling of myocardium, liver and kidneys; early septic spleen.

The important points are: (1) the enormous number of staphylococci, giving a heavy growth of *Staph. aureus* on culture from the lung; (2) the destruction of epithelium in trachea and bronchi; and (3) necrosis, hæmorrhage and little active reaction in lungs.

ISOLATION OF VIRUS

Eighteen hours after the patient's death a bacteria-free filtrate of lung tissue was prepared for inoculation of a ferret and mice.

Preparation of filtrate.—The current method of obtaining virus filtrates involves clarification of a tissue suspension through paper and asbestos pulp (Elford 1938). A method developed during the past year makes it possible to dispense with this initial clarification with consequent saving of time and labour.

After the usual centrifugation of the tissue suspension at 3000 rev./min. for 30 minutes, the supernatant fluid is filtered through three superimposed 'Gradocol' membranes. The membranes, which were prepared in this department, had an average pore diameter (APD) of 1·5μ 1·05μ and 0·7μ; they were so arranged that the suspension had to pass first through the membrane with the largest APD and last through the one with the smallest APD. The membranes thus act in succession as traps for particles of decreasing size, and each membrane holds back particles which would tend to block the pores of the next one. The membrane of 0·7μ APD retains bacteria.

By this method the volume of filtrate per unit area of membrane is about half that obtained by the method involving preliminary clarification. On the other hand, it is found possible to use tissue concentrates (e.g., lung emulsions from mice infected with influenza virus) up to 20% compared with the 5% used in the current method. The yield of such filtrates is comparatively smaller, but their potency measured by the 50% end-point calculation method of Reed and Muench (1938) is two or three times that normally obtained.

This method was used for the preparation of a filtrate from a 20% suspension of lung tissue from the case described above.

Inoculation of ferrets.—The filtrate (1·0 c.cm.) was passed to a ferret in the usual way and a slight rise of temperature (103° F.) was observed after 88 hours.[1] The animal was listless, but no other signs were observed. On post-mortem examination nothing abnormal was seen.

A filtrate from a 10% suspension of the turbinates, prepared by the method outlined above, was passed to a second ferret four days after the initial inoculation. The temperature rose to 103·8° F. after 64 hours. A third ferret similarly inoculated from a filtrate of the turbinates of the second ferret produced a temperature of 103° F. after 64 hours and in this animal congestion of the turbinates and a slight livid discoloration of one lung lobe was seen. Subsequent passages were made to 21 ferrets in all, at intervals of three to four days, involving 19 regular passages. The 17th and 18th passages were done in duplicate; 1 ferret of each of these two passages was bled after a fortnight to obtain sera; all the others were killed on the third or fourth day. From the 4th ferret passage onwards, all showed congestion of the turbinates and more or less extensive livid areas on the lungs; all reached their maximum temperature 48 hours after inoculation. Ferrets 7, 8 and 21 showed temperatures between 104° F. and 105° F. Most of the animals were obviously ill, listless and eating little; 5 had wet noses and sneezed. In general these effects were similar to those observed by Francis in ferrets inoculated with influenza virus B.

1. The normal temperature of the ferret is about 102° F. Owing to non-specific temperature elevations often seen with these highly excitable animals, most workers do not consider readings below 104° F. as pathognomonic. As a routine, the temperatures of the ferrets in this department are taken daily for a fortnight, and only those which do not show a temperature above 102° F. during this period are selected for inoculations. This makes it possible to consider a rise to 103° F. as suggestive of a "take."

Inoculation of chick embryos.—Attempts to infect chick embryos were made first from the filtrate prepared from the turbinates of the 12th ferret, since no embryos were available before this. Neither this filtrate nor one prepared from ferret 14 proved successful. From the 15th ferret, however, it was found possible to transfer the virus to chick embryos. The inoculation in every case was done by the amniotic route and the embryos incubated at 35° C. (Burnet 1941). The first pass to two embryos did not result in any obvious infection, but passes from these to two further embryos produced a positive result. The allantoic fluid of these embryos agglutinated chick cells (Hirst 1941). From this fluid a further 27 passes were made and there was a demonstrable increase in the infective titre of the allantoic fluid. This reached a maximum at the 15th passage, a dilution of 10^{-8} killing the embryo within 48 hours and a dilution of 10^{-9} showing that virus was present by a positive Hirst test. From the 6th passage onwards, inoculations were made into the allantoic cavity instead of the amnion. Discrete lesions were first observed on the considerably thickened chorio-allantoic membranes of the 10th passage embryos.

Inoculation of mice.—Many attempts were made to infect mice with the virus. Filtrates from the human lung and from the turbinates and from the lungs of 19 ferrets and allantoic fluid of 6 infected chick embryos were used. These inoculations did not produce lung lesions in any of the mice, nor were such lesions produced by further passages from these mice. Serial passes were made in different experiments through 5, 6, and 8 mice.

Serological investigations.—Sera obtained from 2 ferrets inoculated in parallel with the 17th and 18th passage ferrets were tested against the new virus strain, using allantoic fluid, and against egg-adapted influenza virus A (PR8) and influenza virus B (Lee) strains. Using Hirst's technique (1942), it was found that these sera inhibited to a high titre the agglutination of fowl erythrocytes by the new virus strain and by the virus B strain, whilst no effect was observed on the agglutinating power of the virus A strain. A PR8 ferret immune serum, on the other hand, tested against the new strain, proved ineffective. Lack of a virus B immune serum prevented a further test for a more detailed identification. The conclusion seemed justified, however, that the new virus strain, which may conveniently be called the "Paddington strain," was definitely not an A strain, but most probably related to the B type.

Dr. C. H. Andrewes and Miss K. Mills kindly confirmed the above findings and their serological investigations showed that this virus strain closely resembles the virus B strain (Lee). Samples of convalescent ferret sera and human sera obtained in 1943 showed slightly greater antibody rises against the Paddington strain than against the Lee strain of influenza B.

DISCUSSION

The difficulties experienced in recent years in isolating influenza virus B strains in this country are probably due to their low virulence. The fact that an influenza B strain has been isolated from a fatal case does not necessarily prove its special virulence. It is very likely that the rapid fatal issue was due to toxæmia resulting from the heavy infection with *Staph. aureus*, the patient having had probably very little resistance against this organism. The association of influenza virus with *Staph. aureus* in a rapidly fatal case of influenzal pneumonia recalls the observations of Andrewes, Smith and Stuart-Harris (1937) that "when *Staph. aureus* is a secondary invader, death is apt to occur more quickly."

Serologically, the new B strain closely resembles the B (Lee) strain. But its high virulence for chick embryos and its reluctance to infect mice are distinguishing features.

SUMMARY

The isolation of an influenza virus B strain from a fatal case of influenzal pneumonia is described. By a modified method of filtration through 'Gradocol' membranes a highly potent filtrate of lung-tissue suspension was prepared. This was found capable of infecting ferrets and subsequently chick embryos. Attempts to infect mice failed.

This strain resembles closely, but is not identical with, the B strain (Lee) described by Francis.

I should like to thank Prof. W. D. Newcomb, FRCP, for drawing my attention to this case, and Dr. C. H. Andrewes, FRS, for his constant interest and advice.

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BLOODLESS TONSILLECTOMY UNDER LOCAL ANÆSTHESIA

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MAJOR RAMC; ENT SPECIALIST

IN America and on the Continent the use of general anæsthesia in tonsillectomy has not found much favour. The reason for this is not—as is sometimes thought—a lack of skill on the part of the anæsthetist, but because it is believed that local anæsthesia has very definite advantages. Since my postgraduate days in Vienna I have performed more than 2300 tonsillectomies under local anæsthesia, and, with my present technique, claim that 90% of the operations are completely bloodless, while in the remaining 10% there is rarely more than an eggcupful of blood lost.

The essential principle of this operation is the injection of a very large quantity of 'Novutox'[1] (this proprietary preparation of procaine already contains a small amount of adrenaline) into the so-called tonsillar capsule, which acts in three ways. First, the anæsthetic properties are so great that the patient experiences no pain at all; secondly, it acts as a perfect hæmostatic; and thirdly, by its quantity alone, it forces the tonsil from its bed, forming an intervening layer of œdematous tissue.

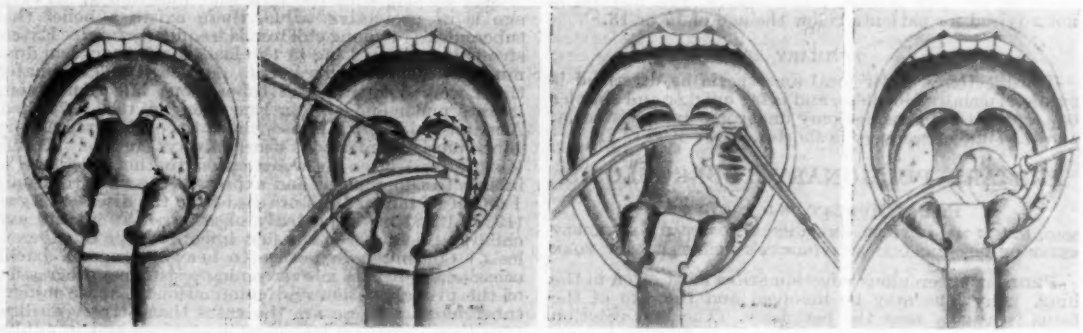
It is claimed that by this method there is no pain whatever during the operation, and the after-pain is always much less than when a general anæsthetic has been used; the general recovery is much quicker; and the total operation time is only about 10 minutes. (With a trained team in the theatre it has recently been possible to complete seven tonsillectomies in 70 minutes.)

DETAILS OF TECHNIQUE

Preparation of patient.—About forty-five minutes before the operation the patient is given morphine gr. ¼ and atropine gr. 1/100. Ten minutes before, while the patient is still in his room, the throat is sprayed by an assistant with equal parts of 10% cocaine and adrenaline 1/1000. (When he comes to the operating theatre, the patient may complain of a lump in the throat and that he cannot swallow properly, but this is the maximum discomfort he is likely to feel.)

Injection.—With the patient seated on an ordinary chair, facing the operator, who sits on a slightly higher level, the throat is now injected. As this is the most important part of the whole operation, the operator should wear a powerful and properly focused headlight. A suitable syringe and needles should be used. A 20 c.cm. Record syringe with movable thumb and finger rings is best, for the point of the needle may then be turned in any direction without alteration of grip. The needles should be reinforced, about 5 in. long, and curved almost to a right angle at the tip, and they should

1. Novutox and procaine are sometimes thought to be synonymous. On three separate occasions, when at operation there was slight pain and slight bleeding, it was subsequently discovered that the dispenser had used procaine instead of novutox, thinking that there was no difference, and that therefore no explanation was necessary. Novutox is procaine hydrochloride containing 0·000 02 g. epinephrine per c.cm. in Ringer's solution with an addition of quinine derivatives and thymol to make it self-sterilising. Procaine is described in the *BP* as a "Local anæsthetic which when injected has a rapid action and is moderately powerful, but somewhat transitory. To obtain a prolonged and intense anæsthetic effect it is therefore usual to add a small proportion of adrenaline, with the object of delaying dispersion from the site of injection."



1 2 3 4

Fig. 1—The arrows show the direction of the needle for the injections of local anæsthetic.

Fig. 2—With traction on the tonsil the incision is made from below upwards and sweeps around the upper pole and down the free edge of the posterior pillar, as indicated by arrows.

Fig. 3—The œdematous tissue behind the tonsil is broken down by blunt dissection, the upper pole being freed first.

Fig. 4—The tonsil now remains attached only by a pedicle. The snare is then tightened over the pedicle and the tonsil thus completely enucleated.

have some locking device on the tip of the syringe (Galbraith's hæmorrhoidal needle is suitable).

Five injections, each of 5 c.cm. of ½% novutox, are made into each tonsil area; in this low dilution 50 c.cm. is quite harmless. The first injection is made at the top of the anterior pillar, about 1 cm. from the margin, with the tip of the needle pointing downwards and slightly outwards. The second is made in the middle of the pillar, 1 cm. from the free border, with the needle pointing directly downwards. The third, and most important, is made at the junction of the anterior pillar and base of the tongue, the needle point being directed downwards and inwards. For the fourth injection the point of the needle is inserted behind the posterior pillar as high as possible and in an upward direction, the syringe being drawn over into the opposite angle of the mouth. The fifth injection is made behind the posterior pillar as low as possible, the point of the needle being directed downwards and outwards, with the syringe drawn well over into the angle of the mouth (fig. 1).

When the injection of both tonsils has been completed there will be considerable local swelling due to the injected fluid. The patient should wait for not less than ten minutes before the dissection is begun, so that absorption may properly take place.

Operation.—The patient is brought back to his chair and a sterile towel is fastened around his neck, with another over his head which covers his eyes. He sits with his chair drawn well forward, close to the operator's stool, one hand being placed on each of the operator's knees. An assistant standing behind the patient's chair steadies the head in his two hands, turning it gently to right or left as the surgeon may desire.

Throughout the operation it is desirable to keep up a stream of reassuring or even impersonal conversation. This may seem a trivial point, but it does help to keep the patient's attention distracted, and is always appreciated. In Vienna this is called "vocal anæsthesia."

No gag is necessary. The patient is asked to open his mouth, and the tonsil behind the œdematous anterior pillar is gripped by the volsellum. A tongue-depressor may be used in the left hand for this procedure, but afterwards this may be discarded, for the tongue is easily controlled by the depressed volsellum.

Exerting slight traction on the volsellum, an incision is now made along the free margin of the anterior pillar from below upwards. This sweeps around the upper pole of the tonsil to the base of the uvula and then down the edge of the posterior pillar for about an inch (fig. 2). With a blunt dissector the œdematous tissue behind the upper pole is gently and easily wiped away from the tonsil, and, as traction is exerted on it, the stripping down proceeds until the tonsil is attached only by the lingual prolongation (fig. 3). This stripping may be made more easily by a flat rake-like instrument with fine teeth, and, should it be necessary, force may be used in the separation of the lower half of the tonsil from its bed without hurting the patient. The tonsil must be entirely free, except for its attachment by the lingual prolongation, before its removal is attempted. It is especially important to see that it has been completely separated from the anterior pillar at its lower extremity in order to avoid damage to the pillar.

The snare may now be slipped over the handle of the volsellum, and, by a series of light shaking movements, forced down to the base of the lingual prolongation. Here it may be tightened until it cuts through (fig. 4). The tonsillar fossa will now be found to be absolutely smooth and clean, with both pillars free and intact.

Though there will have been no bleeding, I pack the fossa with a wad of moistened wool, well wrung out, before proceeding with the next tonsil. When the wool is removed at the end of the operation, the fossa should be quite dry. If there should be an oozing point it can be controlled by the application of artery forceps for two minutes.

The total time occupied in the removal of both tonsils seldom exceeds three minutes. Should there be two or more tonsillectomies on the operation list, it saves a considerable amount of time if the injections are given immediately one after the other, the first dissection being started after the last injection. With two sets of instruments it should be possible to complete five to six cases in an hour.

Postoperative period.—The patient is allowed to sit out of bed on the evening of the third day, and is sent home on the fifth or sixth day. He should be able to resume his normal life within a fortnight of the operation.

COMMENTS

It may be argued by or for the patient that the idea of a local anæsthetic distresses them, or that the operation would be almost impossible because of "sensitivity of the throat," but nearly all patients can be persuaded to favour this method if it is explained properly, and most of the apprehension at the time of operation is removed by the morphine. I can recall only one case where, with a hysterical patient, I was unable to complete the operation under local anæsthesia. The cough reflex is of course abolished by the preliminary cocaine spray. The patient should not be allowed to see or hear instruments either before or after the operation, and the possibility of seeing blood should be reduced to an absolute minimum. Most patients volunteer the statement after the operation that "It didn't hurt a bit," or "It hurt far less than having a tooth removed"; and if not actually volunteered this will be readily admitted when asked. I have never seen any complications from the injection of this large quantity of local anæsthetic.

It has not been found necessary to ligature a vessel, for should there be any oozing this can be effectively controlled either by the temporary application of an artery forceps or by inserting a cotton-wool plug wrung out dry in turpentine. Bleeding after the patient is back in bed is due either to an incomplete dissection or to having allowed the patient to leave the theatre while there was still a slight ooze from the tonsillar fossa. Secondary hæmorrhage is very uncommon.

A history of repeated quinsies is no contra-indication to the method described—in fact the method is particularly suited to such cases. Naturally the dissection is made a little more difficult by past quinsies, but not so

much so as with general anæsthesia. The method is not advised for patients below the age of 17 or 18.

SUMMARY

Tonsillectomy under local anæsthesia as described is painless, usually bloodless, and is far quicker and simpler to perform than tonsillectomy under general anæsthesia, and the time of recovery is shorter.

PRIMARY PULMONARY TUBERCULOSIS

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PRIMARY tuberculous infection arises most often in the lung. Any lobe may be involved and the site of the focus is usually near the periphery. The first reaction of tissue to the tubercle bacillus is an exudative inflammatory one with outpouring of neutrophils and serum; later, the reaction becomes proliferative with mobilisation of monocytes, macrophages and lymphocytes. Caseation takes place in the centre, the surrounding exudate is largely absorbed and a capsule forms around the focus. The caseous centre becomes inspissated and calcified and eventually may become ossified. Similar changes occur in the lymph-glands which drain the area of lung infected, and a lymphohæmatogenous dissemination of bacilli takes place in most if not all cases. About six weeks from the beginning of infection the infected person becomes sensitive to tuberculin.[1]

The chief distinctions between primary tuberculous infection and postprimary or secondary forms of tuberculosis are as follows. Primary infection develops in those who previously have not been sensitive to tuberculin, secondary infection in those who are already sensitive to tuberculin. Primary infection may appear in any part of the lung; secondary infection usually starts in the upper third of the lung. The tracheobronchial lymph-glands become infected and enlarged in primary infection, whereas the draining lymph-glands seldom become involved in secondary infection. The caseous area in primary infection usually becomes encapsulated and calcified; in secondary infection caseous areas usually proceed to liquefaction and cavitation. Hæmatogenous dissemination, not clinically evident at the time, takes place in most cases of primary infection; in secondary infection the lesion tends to spread by infiltration and by the bronchi.

The primary focus in the lung may become completely healed in the course of time, biologically as well as anatomically, leaving behind a small scar or a calcified nodule. Though encapsulation and calcification also occur in the neighbouring lymph-glands there usually remains some caseous material within the capsule and here live bacilli may persist indefinitely. Towards the lung apices and in other organs there likewise often persist small areas of encapsulated foci of tuberculosis derived from the previous dissemination. The patient who recovers from primary infection—and most patients do recover—has become sensitive to tuberculin and has become a host to the tubercle bacillus. Should he again succumb to infection, from an exogenous or endogenous source, his tuberculosis will be of a secondary type and of a more serious form.

It has commonly been claimed that primary tuberculosis, contracted in childhood, provides an immunising protection against later infection. Experiments on guineapigs and other animals have been quoted to support this claim. This experimental work may be summed up briefly. Two groups of guineapigs, one group previously injected with a comparatively mild dose of bacilli, are injected with a strong dose of bacilli. The members of the group previously infected survive longer than the members of the other group. They do not continue to live and thrive; like the second group they also die from tuberculosis but they take a little longer to do so. This longer survival is often alluded to in terms of immunity.

All patients with phthisis have previously had a primary infection.

1. Lack of space forbids a review of the work of Parrot (1876), Kuss (1898), Ghon (1916), Ranke and others whose names are associated with the study of primary infection.

Side by side with the idea that infection at an early age is of protective value, there exists a belief that tuberculosis in young children is frequently fatal. Extensive tuberculin testing in the last thirty years has done much to disprove this belief. Drolet (1934) estimated there were 5000 cases of tuberculous infection among infants under one year in New York in 1930; 75 died. Armand-Delille (1927) was inclined to consider pulmonary tuberculosis in infants as nearly always curable. Krause (1926, 1928) often drew attention to the resistance of infants to tuberculosis and expressed the view that only 1 out of 65 infected infants died from the disease. Myers (1935, 1938) has repeatedly observed that infants and children tolerate well the first infection type of tuberculosis. Continuous exposure to heavy dosage of bacilli occasionally results in overcoming resistance, progression of the primary lesion and culmination in acute miliary tuberculosis. These are the cases that attract medical attention. Primary infection, in children and in adults, is usually overlooked.

SYMPTOMS AND SIGNS

With the onset of tuberculin sensitivity, symptoms appear. As a rule the symptoms are mild—sometimes so mild that the primary phase is passed through without the person seeming ill. The chief symptoms are slight pain in the chest, fever to about 101° F., fretfulness in children, lassitude in adults. Children fail to gain weight for a while.

Seldom are there any physical signs to indicate the presence of pulmonary disease. There is an increase of the sedimentation-rate and commonly a slight leucocytosis. In most cases a chest X-ray film demonstrates the shadows of a primary complex. The two component shadows of the primary complex, so-called after Ranke, consist of a peripheral pneumonic one and a perihilar one. The peripheral shadow varies in size from a barely discernible area of shading to one involving most of a lobe. The perihilar shadow is usually the larger of these two shadows and persists longer. There appears to be a difference of opinion regarding the frequency with which these shadows can be demonstrated on an X-ray film. From personal experience of tuberculin testing and of X-raying recent reactors over a period of years I believe that shadows suggestive of a primary complex may be demonstrated in most cases of recent infection. The frequency with which pulmonary and perihilar shadows can be seen in the chest films of patients with erythema nodosum supports this belief, for erythema nodosum, though not a specific reaction, being occasionally seen in other infections, in the majority of cases in European countries is associated with a recent primary infection. For more extensive evidence regarding the ætiology of erythema nodosum I refer the reader to Wallgren (1939) and other Scandinavian writers. When the primary infection lesions have subsided and become encapsulated, only in a minority of cases are the shadows demonstrable on an X-ray film.

Patients with a primary tuberculous infection seldom raise sputum for examination; whatever sputum there may be is usually swallowed. Smear and concentration examination of sputum-cup contents seldom yields positive results. To demonstrate the tubercle bacillus in these cases it is advisable to perform gastric lavage and to culture, or guineapig inoculate, the centrifuged residue of fasting gastric fluid. Attempting to obtain sputum with a pharyngeal swab is not reliable. It is well to repeat the gastric lavage a couple of times. The more assiduous the search for bacilli the higher will be the percentage of positive results.

TREATMENT

The first and most important procedure in the treatment of primary tuberculosis is to separate the patient from the source of infection and thus to protect him from continuous dosage with bacilli. Some of the Scandinavian writers have maintained that the dosage is of little importance—that a few bacilli may be as fatal as many. Results of contact examinations and of attempts to locate sources of infection do not support this view. It is seldom difficult to trace the source of infection when the patient is a child with a progressive primary lesion or with miliary tuberculosis, but to trace it when the patient is a child with a non-progressive type of

primary infection is often difficult and sometimes unsuccessful. In the former instance the source is invariably found in the child's home; in the latter the source is commonly outside the home. Infants, children and adults all have a considerable resistance to primary tuberculous infection; otherwise few would survive infection. Massive infection may overcome that resistance. Lurie (1941), in his important work on inherited constitutional resistance in rabbits, has shown that the greater relative resistance exhibited by some strains can be overcome by massive infection, and that under these conditions the resistant strains develop a generalised tuberculosis similar to that which the less resistant strains develop from a small dosage. Here clinical experience and animal experiment appear to correspond.

Rest is the next most important item in the treatment of these patients. Six to eight weeks' rest is likely to give sufficient time for the lesions to become encapsulated. Most patients recover undiagnosed and untreated, anyway. Making the correct diagnosis is important, however, apart from satisfying one's urge to find the right answer, for it often puts us on the track of a source of infection. A sanatorium seems to be the least advisable place to send a patient with a primary infection. These patients should be protected from further exogenous infection, and a stay in a tuberculosis sanatorium, especially in these days of scarcity of beds, is not likely to achieve that object. They may be allowed to rest in their own homes, but observation can best be carried out in a general hospital. Being usually non-coughers and non-sputum-raisers they are not likely to spread infection.

DISTRIBUTION

With the decline of tuberculosis from the beginning of the present century until recently, a decline interrupted during the last war, it was to be expected that an increasing number of persons would escape infection during childhood and that primary tuberculosis would be found more frequently in adults. Extensive Mantoux testing in recent years in the United States, France and Germany showed a high proportion of young adults to be non-reactors to tuberculin. Long and Seibert (1937) found that the majority of students entering universities in the western states of America in 1935 and 1936 were Mantoux negative. Manderli (1940) said that about 50% of German army recruits were Mantoux negative. Meersseman (1937) found a similar condition in the French army, and has repeatedly commented on the frequency, the mildness of symptoms and the scarcity of fatal results of primary infection among recruits in the French army. Since there are few published figures it is difficult to estimate what percentage of young adults in this country are non-reactors but it may be assumed that primary tuberculosis is no longer confined to children. There appears to be no difference between primary tuberculous infection in the child and in the adult. Sweany (1941), who has done much work on the pathology of primary foci, says there is no essential difference due to age. Myers (1938) thinks that the belief in rapidly progressive disease in adults not previously infected is a myth.

During the last year ten cases of primary pulmonary tuberculosis were diagnosed in the adult medical wards of Stoke Mandeville Hospital. Three of the patients were under 20 years of age; the other seven were between 20 and 28. With the exception of two patients who developed a pleural effusion a couple of weeks after onset of illness the symptoms were mild and of short duration. Of the two patients with pleural effusion, one had a bilateral effusion, the other a contralateral effusion. These two cases afford clinical evidence of hæmatogenous dissemination of bacilli. The effusions cleared up rapidly after rest and aspiration of fluid. All ten patients recovered completely from the immediate effects of their primary infection. In each instance the chest film showed pulmonary shadows suggestive of a primary complex. In only one case was the sputum, obtained by the usual routine method, positive for the tubercle bacillus. In six cases, tubercle bacilli of human type were demonstrated by gastric lavage and culture on Loewenstein medium. To obviate any possible doubt regarding the pathogenicity of bacilli thus demonstrated guineapigs were inoculated in two cases. The guineapigs on autopsy showed active tuberculous lesions. Three of the patients had erythema nodosum. Tubercle bacilli of human type were grown on medium after gastric lavage in each case of erythema nodosum. Where circumstances permitted, follow-up gastric lavages and cultures were performed after recovery, and arrangements were made for an X-ray examination at intervals of 3–6 months. Since nine of these patients came from places outside the jurisdiction of the hospital the problem of finding the sources of their infection devolved on others. The source of infection of the tenth patient was found and isolated.

SUMMARY

An account is given of primary pulmonary tuberculosis and how it differs from postprimary or secondary forms of the disease.

Emphasis is laid on the importance of gastric lavage followed by culture, or guineapig inoculation, as the most effective method of proving the ætiology.

Except when constantly exposed to heavy dosage, or under abnormal conditions, the symptoms are mild and death during the primary infection phase is comparatively rare.

Sanatorium care, on account of the short duration of illness and the danger of continued exogenous infection to the patient, is not advisable.

Ten cases of primary tuberculous infection in young adults are briefly reported.

My thanks are due to Dr. T. Izod Bennett for permission to report these cases and to Prof. J. McIntosh and the staff of the department of pathology for laboratory assistance. Acknowledgment is made to the Director-General of Medical Services, Ministry of Pensions, for permission to publish this paper.

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CARCINOMA OF THE ŒSOPHAGUS

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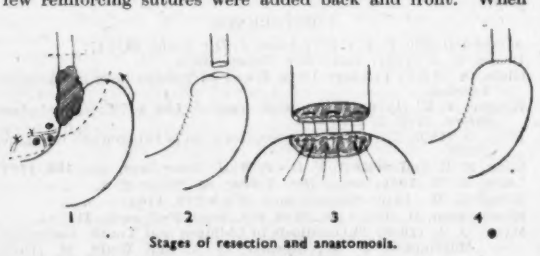
THE following case seems to be the first recorded in this country of recovery from resection with anastomosis of a carcinoma of the œsophagus, although several cases have been reported from other countries.

CASE-HISTORY

A woman, aged 53, complained of dysphagia of three months' duration; latterly only fluids and small quantities of semi-solids had been swallowed. X rays showed a filling defect in the œsophagus 1½ in. above the diaphragm, and œsophagoscopy revealed a typical malignant ulcer at this level which, on biopsy, proved to be a squamous epithelioma. At a first operation on Feb. 1, 1943 (local anæsthesia, and gas and oxygen), a Kader-Senn gastrostomy was performed, the stomach being pulled as far over to the left as possible. At the same time the proximal end of the stomach was investigated; the growth was found to have extended ½ in. distal to the cardia and some mobile enlarged glands were present along the lesser curvature. At a second operation on Feb. 16 (avertin, and gas and oxygen), the thorax was opened through a long intercostal incision in the ninth space, extending from the costal margin in front to the transverse process of the vertebra behind; the lateral part of the erector spinæ was divided, as was the neck of the rib on each side of the incision to facilitate retraction. The

phrenic nerve was crushed and the lower part of the lung freed by cutting the ligamentum latum pulmonis. The mediastinal pleura was incised and the œsophagus explored; the growth was found to be freely mobile and there were no obvious metastases in the mediastinum. The diaphragm was split from the œsophageal opening to the periphery—a finger in the hiatus helping greatly in its division—and the abdomen entered. The spleen got in the way, so it was removed, and the vessels along the left half of the greater curvature of the stomach were tied and cut. The coronary artery was divided between ligatures and the glands stripped from the lesser curvature towards the cardia, which was then freed from the medial part of the hiatus; the œsophagus was separated upwards for about 4 in., care being taken not to injure its blood-supply, the long lower œsophageal arteries from the aorta. The œsophagus, cardia, and stomach could now be delivered easily for resection, which was carried out between clamps placed well above and below the growth (fig. 1).

The anastomosis was performed on the lines suggested by Ogilvie,[1] depending on the observation that the fundus of the stomach can be pulled much higher into the chest than can the cardia, in fact as high as the neck of the fourth rib. The line of gastric resection was closed in two layers, the fundus was pulled up and clamped, and a fresh opening made into its highest part (fig. 2). The posterior suture line followed the procedure used by Grey Turner in performing Billroth I gastrectomy, where the posterior Lembert stitch is replaced by a line of three interrupted through-and-through mattress sutures piercing all the coats (fig. 3). When these are tied the posterior lips of the anastomosis are brought into beautiful apposition for the second continuous through-and-through stitch. The anterior part of the anastomosis was completed in two layers in the usual manner (fig. 4) and a few reinforcing sutures were added back and front. When



Stages of resection and anastomosis.

the clamps were removed the œsophagus contracted like a concertina so that the suture line lay at the level of the arch of the aorta, but without any tension. Part of the opening in the diaphragm was closed and the rest sutured round the middle of the stomach so that an artificial diaphragmatic hernia was produced, and the chest wall closed in layers. A water-sealed drain was inserted in the pleura through a stab wound in the 11th space posteriorly. The operation proved relatively easy and was completed in 1 hour 40 min., during which time a pint of blood was administered by means of a continuous intravenous drip.

The specimen showed a malignant ulcer 2 in. × 1½ in., not extending completely round the œsophageal lumen, about three-quarters of it being in the œsophagus and the rest in the stomach; the glands contained macroscopic growth.

The patient was not very shocked, and next day was remarkably well. She was kept on gastrostomy fluids only for 24 hours, when she was allowed sips of water, and at the end of three days was drinking freely. She was swallowing semi-solids in ten days, and meat and vegetables in three weeks, when her gastrostomy tube was discarded. Convalescence was retarded only by a small loculated empyema which was drained by a separate intercostal catheter, and 3 oz. of pus were eventually coughed out of the original stab drain hole at the end of 6 weeks. She left hospital perfectly fit and swallowing well two months after operation; radiography showed uninterrupted passage of barium. At the end of five months patient was still in good health and swallowing without difficulty.

This fortunate result was due in large measure to the happy conjunction of an operable growth with a relatively young patient. Most carcinomas of the œsophagus occur in old men, and when they do not they are often inoperable by reason of fixity or metastasis. A really operable case will, however, occasionally be encountered; the radiotherapists claim that in this field they can beat the surgeons, but they have yet to show that they can successfully treat carcinoma which has entered the abdomen.

A pitfall might be quoted from a similar case operated on about a year ago. I thought to counter the danger of infection by performing the operation in two stages, and finished the first stage at the freeing of the parts; the fundus of the stomach was hitched up to the neck of the fourth rib by a stitch which unfortunately went too deep, penetrated the mucosa and cut out, and the patient died ten days later of a gastric perforation into the pleura.

I should like to record my debt to Prof. Grey Turner's work on œsophagectomy and Surgeon Rear-Admiral G. Gordon-Taylor's on thoraco-abdominal surgery; to Brigadier W. H. Ogilvie for suggesting the details of the operation; to Mr. Libero Fatti, of the Middlesex County Council, for coaching in thoracic surgery and assistance at the operation; and to Dr. Arnold Barnsley for a perfect anæsthetic.

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Medical Societies

EUROPEAN ASSOCIATION OF CLINICAL PATHOLOGISTS

AT the first general meeting, held in London on Nov. 26 and 27, with Dr. S. C. DYKE, the president, in the chair, the association adopted a constitution and made plans for the establishment of local branches on the continent of Europe and for the interchange of workers in clinical pathology between laboratories in European countries after the war.

At the scientific meeting Dr. H. BAB (Berlin) discussed the clinical symptoms of *adrenocortical hypo- and hypertrophy*, and showed photographs of cases of dwarfism, gigantism and intersexuality caused by disturbances of the action of the adrenal cortex and illustrating the effects of preparations embodying its active principles.

Dr. M. MANDELBAUM (Munich) described an *organism of the Neisseria group* isolated from mice, which within two hours of being brought into contact with high dilutions of any of the sulphonamide drugs showed characteristic morphological changes. Dr. Mandelbaum suggested the use of this organism for testing the therapeutic value of new sulphonamides.

Prof. S. JELLINEK (Vienna) demonstrated that the reaction of the tissues to *electrical lesions* is entirely different from burns due to heat. Tissues affected by electricity show distortion, and though they may come to harbour micro-organisms they do not become truly septic. Professor Jellinek strongly deprecated the treatment of electrical lesions as true burns.

Dr. H. POLLAK (Prague) recorded observations that the hippuric acid test showed a deterioration of liver function in patients with peptic ulceration and improvement in liver function after successful treatment of the gastric conditions. He pointed out that the test could give valuable information as to the fitness of the patient for surgery. Prof. M. REISS (Prague) had found that the *shock* induced in rats by the intraperitoneal introduction of hypertonic glucose could be largely prevented or neutralised by the exhibition of corticotrophic hormone. Withdrawal of this hormone by ablation of the hypophysis rendered the animals more susceptible to shock. He suggested that shock could be more readily treated with corticotrophic hormone, which stimulated a whole series of hormonic responses, rather than with cortin or similar preparations of the adrenal cortex alone. Professor Reiss showed a hand hæmatocrit for field use, capable of being worked from any rapidly rotating wheel such as that of a jacked-up motor-car.

Dr. J. UNGAR (Prague) discussed the principles underlying the testing of chemotherapeutic substances in vitro, in vivo and in tissue culture.

DEMONSTRATIONS

Dr. B. L. DELLA VIDA (Rome) demonstrated crystals of the various types of drugs of the sulphanilamide group appearing in the urine of patients under treatment; Dr. ELIZABETH DELIKAT (Bratislava) films and cultures

from a case of acute and fulminating pulmonary aspergillosis; Dr. I. FRIEDMANN (Prague) the preparation and use of dried egg powder as a substitute for fresh eggs in the preparation of media for the cultivation of tubercle bacilli; and Dr. F. PICK (Prague) microscopical sections from the organs of a child showing extensive cellular reactions which had been variously diagnosed as infectious granuloma and a congenital lipoid dystrophy.

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Psychiatry on Dec. 14, with Dr. W. NORWOOD EAST, the president, in the chair, Dr. JOSHUA BIERER discussed

A New Form of Group Psychotherapy

It has been asked, he said, why the discoveries of modern psychotherapy have not been extensively applied in mental hospital practice. Until recently we had found no practical method of using them, but this objection, he feels, no longer holds good. Mind and body are one entity, and this entity is part of a larger entity—society. A man working in industry lacks the chance to develop initiative and responsibility. In the dissatisfaction of people during the past thirty years he sees a reaction not to their economic situation but to psychological slavery. He described an experiment in the form of patients' social clubs, two of them in a public mental hospital and four attached to the outpatient departments of voluntary hospitals. The clubs were started with three main ideas. First, it was felt that patients robbed of freedom might improve if they were given a temporary illusion of freedom in the club. Secondly, they might improve faster and relapse less readily if they were trained in hospital to mix with other people socially and encouraged to accept responsibility and use initiative. Thirdly, helpful situations might be contrived for them in the club. Patients dread the loss of freedom entailed in mental hospital care, especially since the period of imprisonment is indefinite. The possibility of being a voluntary patient is still little known. Clubs were started by gathering a few suitable patients together, putting the idea before them and asking them to develop it. They were ready to accept the responsibility and did not lack ideas. The first club began by meeting three times a week, but the war made it necessary to reduce the meetings to once a week. The club council meets separately once a week and there are occasional subsidiary meetings. It is run on democratic lines, a fresh group of officers being elected every three months; the chief officers are chairman, vice-chairman, secretary, and conveners of magazine, sports and house committees. The frequent changes of officers give more members a period of responsibility and a chance to use initiative. The council makes out the programme of meetings, considers suggestions and complaints of members, and organises extra events. Members of the hospital staff can attend the socials only by invitation from one of the patients, which helps the patients to feel that they have an opportunity to give instead of always receiving. Patients become eligible for the club on the recommendation of their doctor; they are introduced as guests by members, and are elected at the next general meeting. The first club was for acute patients and non-deteriorated chronic patients. In 4 years 300 have attended it, with an average attendance of 50. Members are of both sexes; they range in age from 15 to 70, and have almost as wide a difference in social and intellectual standards, which has not proved a drawback. They were suffering from schizophrenia, anxiety states, depression, neurasthenia, paranoia and so on. The meetings undertook community work, discussions and lectures, card-drives, dancing, sports and rambles, and preparation of food. The officers had training in the running of a second club for chronic patients.

Difficulties have of course to be overcome. The relationship between the doctor and the group inevitably differs from that between the doctor and an individual. Most psychotherapists, in Dr. Bierer's experience, are schizothyme rather than cyclothyme, and though they learn to overcome their shyness with individuals they may have difficulty in handling a group. The transference of a patient to his own psychotherapist may conflict with his transference to the psychotherapist guiding the club. The relationship of the patients to each other has happily been good, showing none of the gossip, jealousy and petty encounters found in clubs for normal people. In order to give patients a real sense of freedom of action any work done by the staff must be behind the scenes, and they must behave like ordinary club visitors. Starting with the belief that the patients must be trusted with as much freedom as possible they had to be prepared to take a certain amount of risk; but there have been no unpleasant incidents in 4 years, though in two cases couples who met at the club subsequently married. For many patients the experience and responsibility of serving on the council renewed self-confidence. A few months ago a second club was started for chronic and deteriorated patients; this is not yet self-governing. Meetings encourage collective activities, community singing, simple games and dancing. Ex-officers of the first club run it and it gives them joy to find they can provide something which their less fortunate fellows appreciate.

Outpatient clubs have been founded to help discharged patients to maintain the social adjustment begun in hospital, and possibly to reduce relapses. Nearly every patient in the outpatient department has difficulty in adopting himself socially, and many have no social life at all. To avoid stigma, clubs meet in buildings outside the hospital. Membership is not limited to patients; anyone who is properly introduced may become a member. Doctors take no office, but one is always present. Meetings are held weekly and the light expenses are met by the members. Clubs are now in action in East Ham and Southend (for Runwell and Southend General Hospital patients) and in connexion with Bart's and Guy's psychiatric outpatient departments. Average attendance at Bart's club is 30, and at the others 15. These clubs, like those within the hospital, have provided social opportunities for those who for one reason or another felt cut off from their fellows. Dr. Bierer feels that the clubs combat shyness, loneliness, general and social inferiority feelings, sexual maladjustment, lack of incentive and aim in life, inability to coöperate with others, claustrophobia and agarophobia, parental domination, acute disappointment and physical defects. He suggested that other mental hospitals and outpatient departments might organise such clubs. "By helping the patient to make human relationships," he concluded, "we destroy the proof of his failure and so begin rebuilding a healthy personality."

DISCUSSION

Dr. E. B. STRAUSS said that the Bart's outpatient club had proved a valuable auxiliary to treatment. He pointed out that Dr. Bierer saw the patient's problem in terms of frustration at the level of the herd or community instinct. At the bottom of most psychological maladjustment is lack of a sense of personal validity; and any interests which restored this sense are acceptable.

Dr. J. MAXWELL JONES asked whether any ordinary club in the district would not serve equally well.—Dr. T. P. REES endorsed the opportunity which a club gives for the sexes to meet and mix. There is too rigid a separation of the sexes, he considers, in most mental hospitals. They have a patients' club at Warlingham, though not, he admitted, run on the democratic lines advocated by Dr. Bierer. At one time the club-room was open all day, but it proved so popular that the patients went there when they should have been engaged in occupational therapy; so that it is now open only from noon till 7 PM. He felt he would probably try out Dr. Bierer's methods.—Dr. M. B. BRODY spoke of the increased rapport established between doctor and patient, thanks to attendance at the club.

REPLY

In replying Dr. BIERER referred to mass psychotherapy, by suggestion; class psychotherapy, by lectures to a group; and group analysis, in which the problems of one member are analysed by another member of the group. Social clubs, he felt, offer a fourth type of group psychotherapy. In club discussions, for example, it is possible to ask a patient to talk about some problem parallel to his own; and he will do so without realising at the time that he is discussing his own problem, though later he profits by the increased insight he has gained

from it. Again, situations can be contrived to break down self-doubt. Thus a girl who fancies herself unattractive will attend her first club meeting in apprehension; the doctor arranges without her knowledge that one man after another asks her to dance.

The CHAIRMAN in summing up mentioned the lack of opportunity for the sexes to meet in penal institutions. It can be partly alleviated, he said, by having a woman nurse on the male side of the institution.

SUDAN MEDICAL SERVICE

THE activities recorded in the report of the Sudan Medical Service for 1941 would be creditable in times of peace and are doubly so under the stress of war—there is no evidence of restrictions either in performance or production. The general health of the Sudan remained satisfactory and the incidence of epidemic disease below the average. The small amount of malaria in the Northern Sudan is attributable to favourable climatic conditions. The strain of war and lack of leisure took their toll of British officials, who showed a higher incidence of sickness and consequently a greater number of deaths and invaliding than for some years past. Cerebrospinal fever topped the list of epidemic diseases, and some 1824 cases were reported with 459 deaths, which compares favourably with 1936 when there were 13,440 cases and 8906 deaths. Diphtheria was not of major importance. Relapsing fever incidence was above the average, with 3028 cases and 110 deaths. The small amount of smallpox (46 cases with none fatal) bears testimony to the efficacy of the extensive vaccination campaigns of the last four years and to the lymph produced in the local Stack laboratories.

For the first time, a case of tick typhus was reported in Equatoria Province. Yellow fever was absent during the year. Bilharziasis (*B. hæmatobia*) constituted no real danger, but remains as a potential menace to the irrigated areas of the Gezira. The incidence of blackwater fever (28 cases with 9 deaths) is not great; Arab Sudanese provided the greater number—not a single European was affected. Guineaworm is prevalent in Equatoria Province, the Nuba Mountains and the Bor district of the Upper Nile Province, but now that anti-guineaworm wells have been constructed in many endemic areas, it is reasonably hoped that there will be a reduction in this disease. Regarding dysentery, it is rather surprising to read that of 3661 cases admitted to hospital 2924 were diagnosed as amœbic and only 737 as bacillary in origin, though the war must have considerably increased the incidence of the latter. On the other hand, the incidence of enteric fevers remained remarkably low, only some 129 cases being recorded. Among the 477 cases of kala-azar reported there was a remarkably high mortality, with 138 deaths; these must be largely attributed to the recent campaigns in the very worst endemic centres. In spite of treatment with 'Stilbamidine' many patients succumbed and the Sudan variety appears to be particularly resistant to any form of treatment. Under the heading of cutaneous leishmaniasis there was one example of espundia (mucocutaneous leishmaniasis) which has occasionally been recorded before from the Sudan. The 46 cases of oriental sore came mostly from the Kordofan Province. Of trypanosomiasis 125 cases were reported in Equatoria Province, 47 in a fresh outbreak in the Meridi district and 1 in the Kajo Kaju subdistrict. A pass system was organised between the Sudan and Belgian Congo, and between the Sudan and French Equatorial Africa, in order to limit the spread of the disease and enable people to visit relatives.

The section on public health and hygiene, by Lieut.-Colonel H. A. Crouch, describes special measures for the control of yellow fever in view of the remarkable outbreak in the Nuba Mountains in 1940. There has been no recrudescence. Immunisation has been carried out on an extensive scale for all members of the Forces, all officials, police, railway and steamer personnel, medical staff, school-children, missionaries and others going south of Khartoum. All guards and employees on aerodromes were included and mass inoculation was undertaken in villages near aerodromes, posts and lines of communication. The campaign against aedes mosquitoes has been a feature of public health work, necessitating the employment of extra staff.

POSTWAR INTERNATIONAL COLLABORATION IN MEDICINE.—Dr. Melville Mackenzie has chosen this subject for the Harben lectures which he is to deliver to the Royal Institute of Public Health and Hygiene, 28, Portland Place, London, W.1, on Jan. 24, 25, and 26 at 3 PM.

Reviews of Books

Permeability of Natural Membranes

H. DAVSON, D SC, associate professor of physiology, Dalhousie University, Canada; J. F. DANIELLI, D SC, AIC, Beit memorial research fellow and fellow of St. John's College, Cambridge. (Cambridge Univ. Press. Pp. 361. 25s.)

THE authors have undertaken a task long overdue in compiling the available evidence—for much of which they are personally responsible—on the fundamental question of permeability. They are not too technical for any medical reader who is willing to skip a little. Serious students of physiology and biochemistry, and teachers of these subjects, will find much valuable information and many new ideas. The behaviour of the various kinds of membrane encountered in the body is succeeded by a summary of modern views on the nature of the cell membrane. Equilibria, and partial or selective permeability of a membrane are discussed. Experimental methods are explained, and the tricks employed by the erythrocyte to deceive investigators are frankly exposed. The book is rounded off by chapters on hæmolysis, secretion, renal function, and the kind of theory of permeability which seems to be emerging from the available evidence. The authors claim no more than to draw attention to the transition from qualitative to quantitative studies of living membranes. They write critically and they neither oversimplify nor elaborate unduly on inadequate evidence.

Annual Review of Biochemistry.

(Vol. XII.) Editors: J. M. LUCK, J. H. C. SMITH, Stanford University. (Lewis. Pp. 704. 31s. 6d.)

THE articles in this volume are well up to the standard we have come to expect. Lipman's section on the biological oxidations and reductions gives a good summary of the present position, and contains some valuable notes on the dropping mercury electrode, and the use of polarography in the study of enzymes. The proteolytic enzymes are discussed by Herriott in a timely review of a subject about which biochemists tend to remain rather old-fashioned. Besides such usual subjects as the steroids, proteins and amino-acids, vitamins, and synthetic drugs the book covers the microchemistry and electron microscope.

Hermaphroditos

The Human Intersex. A. P. CAWADIAS, MD DURH., FRCP, physician, St. John Clinic and Institute of Physical Medicine, London. (Heinemann. Pp. 78. 15s.)

THIS book is an extension of Dr. Cawadias's Thomas Vicary lecture to the Royal College of Surgeons. It is also an improvement on it, for some of the unduly optimistic claims for endocrine treatment then made have been wisely omitted. The author exposes and explains historically the fiction of the true hermaphrodite and proceeds to elaborate in detail and with ability his personal views. These rest upon certain premises with which all students would agree.

> "A male is not a male because he has testes; he has testes because he is a male, and similarly a female is a female not because she has ovaries but has ovaries because she is a female."
>
> "Intersexuality is a normal phenomenon. There is no absolute male nor absolute female."
>
> "The system of sex determination . . . consists in an interaction of a biological field, a sexoformic impulse and a biological environment."
>
> "The biological field of the human embryo is bisexual. . . . On this field the organising sexoformic impulse . . . acts," always unisexually, through the genic sex organisers and the endocrines.

But though this hypothesis is ably developed, there are curious omissions which deny to this book the rank of a classical monograph. The experiments of Greene and his associates in America, which are favourable to the thesis, are not mentioned. Goldschmidt is too cavalierly dismissed, although in many respects he too is a friend. There is, too, a tendency to describe at length the patients who "fit" well, and to leave unmentioned such awkward cas s Guldberg's example of uniovular twins, one female and one gynandroid.

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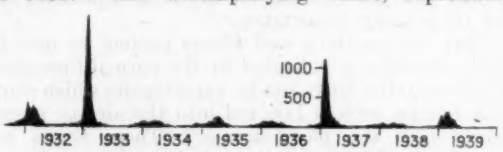
THE LANCET

LONDON: SATURDAY, DECEMBER 25, 1943

INFLUENZA

THERE is an inevitable fascination in contemplating charts of the varying annual toll of influenza, in considering why the disease hits us in one year and not in another, and in peering thence into what lies ahead. This pastime has been rather more profitable since 1933 when a virus, now called influenza A virus, became amenable to laboratory study, and still more so since 1940, when a second agent, influenza B virus, was recognised. We can now be sure that there is every winter a basic level of respiratory infection which is not due to either virus, and that in some years a superimposed wave is caused by virus A, at other times by its brother, B. In Britain for the last decade these waves have all been in the early months of the year. Before B was recognised, there were widespread A outbreaks in 1933 and 1937 with a lesser one in 1935. The accompanying chart, reproduced



by courtesy of the Ministry of Health, shows deaths from influenzal pneumonia in London and the great towns. A minor outbreak in 1939 was partly due to A, partly to B; another small-scale prevalence in early 1941 was associated with virus A only. Three papers in this issue record that what little influenza there was at the beginning of 1943 was largely caused by virus B, not at all by A. Clinically this influenza B was not to be distinguished from A, nor from certain other influenza-like illnesses of unknown cause in which on virus could be detected. None of the B outbreaks so far on record has been very widespread or severe. It seems that major peaks on the influenza curve mean that virus A is at large; and we understand that A is the culprit in the current epidemic. It is odd that A viruses are harder to establish in ferrets and mice when the epidemic is a minor one; and B seems even trickier to work with. STUART-HARRIS, GLOVER and MILLS failed to get any 1943 B strain to produce symptoms in ferrets or mice, or to infect chick embryos. HIMMELWEIT, however, persuaded one strain to infect chick embryos, though not mice, after many passages through ferrets.

One point brought out by these papers is that right at the end of last winter's influenza season, just as virus B infections were petering out, virus A turned up and caused a few local outbreaks right into the summer. Here may well be an explanation of why influenza burst exceptionally early this winter; the virus was probably already in our midst, waiting for the seasonal conditions suitable for its rapid spread. Many will note that after four years of war an epidemic has come at a rather abnormal season; they will think of 1918 and will be anxious lest a repetition of the disastrous pandemic of that year may be imminent. It is true that a very early outbreak allows time for many unpleasant things to happen before spring, including a possible second wave caused by virus of changed character. But we may be comforted by the fact that by June, 1918, almost at the beginning of the first wave of the pandemic, there was a tendency for increased mortality to invade the age-groups under 30. There is now general agreement with the far-seeing GREENWOOD that this tendency was the cardinal feature of "1918." As yet there is fortunately no such tendency in the current visitation, but it is to be hoped that practitioners will keep a sharp look-out for this danger-signal. It remains to be seen whether there is any truth or significance in the influenza fatalities in young factory-workers just reported in the lay press as occurring in Berlin.

Victims of influenza may like to know the latest news about the properties of the virus which is hitting them. Earlier estimates [1] gave the size of influenza A as 80 to 120 (probably 90 to 100) mμ. Work published in the United States earlier this year [2] suggested that this estimate was too high and that the virus was actually amongst the smallest known, only 10–12·5 mμ in diameter. The apparent larger size was, so it was asserted, due to carriage of the virus on larger particles coming from the animal tissues. Electron micrographs were reproduced showing minute bodies of the order of 10–15 mμ. These unexpected findings were not confirmed by work over here, as recent correspondence in our columns testified.[3] Work from another group in the USA [4] now makes it probable that original British measurements of the virus's size were not far out (80 mμ is the figure given) and that the small particles seen in the first electron micrographs did not represent the virus at all. This group go further and reproduce micrographs of their own showing particles about 80 mμ across presumably representing the virus. "Some of the images are essentially round and reveal, centrally placed, a circular region of greater density than that of the surrounding structure . . . other images appear to be kidney-shaped. . . . This variation in form could be due to kidney- or bean-shaped particles seen lying in the field in various positions with respect to the indented region." Influenza B [5] looks much the same but is significantly larger, about 100 mμ across.

FORMATION OF LYMPH IN THE LUNGS

THE literature of lymph formation has been well reviewed of recent years,[6-11] and to DRINKER and his colleagues at Harvard we owe a debt for their illuminating observations and opinions. They paid particular attention to the lungs, and their achievements have been due to the successful collection of lymph from the lungs of the dog; after which it was

1. Elford, W. J. and Andrewes, C. H. *Brit. J. exp. Path.* 1936, **17**, 422.
2. Chambers, L. A., Henle, W., Lauffer, M. A. and Anderson, T. F. *J. exp. Med.* 1943, **77**, 265.
3. *Lancet*, Oct. 23, p. 526, Nov. 6, p. 588.
4. Taylor, A. R., Sharp, D. G., Beard, D., Beard, J. W., Dingle, J. H. and Feller, A. E. *J. Immunol.* 1943, **47**, 261.
5. Sharp, D. G., Taylor, A. R., McLean, I. W. jun., Beard, D., Beard, J. W., Feller, A. E. and Dingle, J. H. *Science*, 1943, **98**, 307.
6. Drinker, C. K. and Field, M. E. Lymphatics, Lymph and Tissue Fluid, Baltimore, 1933.
7. Warren, M. F. *Ann. Rev. Physiol.* 1940, **2**, 109.
8. Drinker, C. K. and Yoffey, J. M. Lymphatics, Lymph and Lymphoid Tissue. Harvard, 1941.
9. Weiss, S. *Bull. N.Y. Acad. Med.* 1942, **18**, 93.
10. McMaster, P. D. *Ann. Rev. Physiol.* 1943, **5**, 207.
11. Drinker, C. K. The Lymphatic System, London, 1943.

a short step to the measurement of lymph flow under a variety of experimental conditions. Appreciation of the problems involved demands some knowledge of the anatomical arrangement of the lung lymphatics. For this knowledge WILLIAM SNOW MILLER[12] is chiefly responsible and his views may be stated briefly as follows :—

In the human lung the deep lymphatic system consists of four groups of lymphatics, the peribronchial, periarterial, perivenous and septal (interlobular), which communicate with one another especially where the bronchi divide. MILLER states that no lymphatics are found beyond the alveolar ducts, from which region the four groups may be said to have a common origin. In general the lymph flow in the deep lymphatics is towards the lung hilum ; there are, however, but few valves except at the hilum and just beneath the pleura where the venous lymphatics join the pleural lymphatics. On the other hand, the superficial lymphatic plexus of the pleura is provided with numerous valves, those in the main collecting trunks of the plexus opening towards the hilum. The deep and superficial lymphatic systems anastomose in the following manner : short connecting lymphatics accompany the branches of the pulmonary veins draining the pleura—they connect the pleural lymphatics with the lymphatics draining the alveolar ducts. These connecting lymphatics have valves which open towards the pleura and prevent the flow of lymph from the pleural lymphatics into the deep lymphatics. It follows that the zone where the short connecting lymphatics join the deep lymphatics draining the alveolar ducts may be considered as a lymph "shed." The "shed" is situated just beneath the pleura and averages 2–3 mm. in depth. Thus lymph formed in this zone may flow towards the lung hilum by way of the deep lymphatic system or towards the hilum by way of the short connecting lymphatics and superficial pleural lymphatic plexus. This means that the short connecting lymphatics furnish a bypath for the lymph by way of the pleural plexus in the event of obstruction to the deep lymphatic system.

From MILLER'S observations it would be expected that a transudate or exudate formed from the blood of the capillaries supplying the alveolar "ducts" and alveoli would find its way into the adjacent tissue spaces and be taken up by the lymph channels in the region of the alveolar ducts, whence it would be carried to the hilum of the lungs both by the deep lymphatics and by the superficial lymphatic plexus.

Under normal conditions the hydrostatic pressure in the pulmonary capillaries is probably below the osmotic pressure of the blood proteins ; hence, if the pulmonary capillaries resemble those of the systemic circulation, they are organised for ridding themselves of excess fluid but not for the formation of fluid.[9 14] That the lungs can absorb large quantities of water has been demonstrated by COLIN[13] who gave 21 litres of water to a horse intratracheally in 3½ hours without detriment to the animal. Whether all such fluid is absorbed by the blood capillaries is unknown, but it is not unlikely that some finds its way directly into the lymphatic spaces. The Harvard school have shown that the reverse process of transudation and exudation with consequent formation of lymph is potentiated by anoxia, by the inhalation of irritant gases and by strong respiratory movements. In the first two of these conditions capillary damage leading to greater permeability is the important factor, while the effect of respiratory movements is attributed to increased negative pressure in the chest which tends to promote pleural as well as pulmonary exudates even if oxygen lack is avoided. These Harvard experiments have their counterpart in the investigation of YAMADA[14] who found pleural fluid in 29% of Japanese soldiers at rest and in 70% following severe muscular work. DRINKER and WARREN[15] suggest that in cardiac dyspnœa there is a tendency for fluid to be drawn from the pulmonary capillaries by the increased negative pressure, and, if anoxia is present, the resulting capillary damage augments this fluid formation. A pernicious process is thus set up ; for the greater the amount of alveolar fluid, the less is the chance of oxygen reaching the blood in the capillaries. Administration of oxygen under anoxial conditions diminished the lung lymph flow, and this shows the importance of anticipating the start of the pernicious process by early oxygen treatment. DRINKER and WARREN believe that clinically we may fail to appreciate the patient's need for oxygen until too much time has passed : with present criteria the decision that oxygen treatment is needed usually comes about twelve hours too late. Incidentally, though there is general agreement that an increased capillary pressure favours transudation, it is probable that in the absence of the capillary damage this factor has been overestimated ; thus "back-pressure" effects on the lung capillaries are not of primary importance.[9 16]

That the capillary wall allows protein to pass in either direction is indicated by the normal formation of lymph in the lungs and by experiments which show that foreign protein injected into the airway passes slowly into the blood-stream.[17] These issues are brought into focus by the admission that without more precise knowledge of the hydrostatic pressure in the pulmonary capillaries, and of the degree of permeability of the membrane, transudation phenomena cannot be interpreted. The assumption that the capillary pressure is midway between the pulmonary arterial and pulmonary venous pressure is probably unjustified ; indeed it is likely that both pressure and permeability vary widely from moment to moment in any given part of the vascular bed because the state of the capillary is constantly changing. In this connexion DRINKER and WARREN[15] dismiss the idea that nervous mechanisms control the pulmonary vascular bed, but their view is hardly in accord either with experimental evidence[18] or with clinical experience.[16] The question seems to be not whether nerves exert control on the pulmonary vessels but rather to what degree and on what portions of the vascular bed they do so. All the lung capillaries are not open at one and the same time, for they have been seen to be continually opening and closing.[19] The blood flow even in fully open capillaries may show wide changes and on occasion reversal. Such activity, whether due to nervous or humoral mechanisms, will surely have some influence on the capillary pressure and on the permeability of the capillary walls. It is known, for instance, that the gaseous content of the blood influences capillary permeability ; it is increased by a low oxygen and high carbon-dioxide content. One can imagine, therefore, that sluggish

12. Miller, W. S. The Lung, Baltimore, 1937.
13. Colin, G. Traité de physiologie comparée des animaux, Paris, 1873, vol. II, p. 109.
14. Yamada, S. S. *Z. ges. exp. Med.* 1933, **90**, 342.
15. Drinker, C. K. and Warren, M. F. *J. Amer. med. Ass.* 1943, **122**, 269.
16. Luisada, A. *Medicine*, 1940, **19**, 475.
17. Drinker, C. K., Warren, M. F. and MacLanahan, M. *J. exp. Med.* 1937, **66**, 449.
18. Daly, I. de Burgh, Harvey Lectures, New York, 1936.
19. Wearn, J. T. et al. *Amer. J. Physiol.* 1928, **85**, 410.

capillary blood flow to an ill-ventilated air sac will lead to increased capillary permeability because the regional oxygen tension will be low and the carbon-dioxide tension high. Unequal alveolar ventilation has long been recognised as important, and if it is associated with unequal alveolar capillary blood-supply, may not this explain the patchy distribution of œdema fluid in the lungs observed by SOMA WEISS? We may add that the mechanism of neuropathic pulmonary œdema may be closely bound up with the nervous control of the pulmonary vascular bed; the arterioles and possibly venules are supplied with nerves, but the evidence for the capillaries being so supplied is not unequivocal. Here there is a wide field for exploration; but if advances are to be made it will require all the experimental skill that DRINKER has brought to bear on his own problems.

The conditions governing pleural transudation differ from those for alveolar transudation. The significance of MILLER'S work on the blood-supply to the pleura has not been fully recognised. In man the pleura is supplied by the bronchial arteries derived from the systemic circulation. Are we to regard these systemic capillaries as having the same permeability properties and pressure relations as those supplying the alveoli? Clearly not without direct evidence that it is so. A priori, it would be expected that the hydrostatic pressure in the pleural capillaries would be greater than that in the alveolar capillaries, and (other things being equal) transudates would arise more easily from the pleural capillaries. The fact that the bronchial arteries are the source of supply to the pleura in some animals, and the pulmonary artery in others, might be put to good use in planning further experiments.

Distension of the lymphatics almost always accompanies lung œdema: it has been observed with anaphylactic shock, lung blast, sudden decompression, poisoning by irritant gas, and bilateral vagotomy. Presumably it indicates that the rate of formation of transudate or exudate exceeds the rate of removal by the lymphatics. Since the four main groups of deep lymphatics communicate with one another, they may be regarded as a parallel network. It would be expected, therefore, that if one group shows distension, the remaining three would also be distended. But in animal experiments distension is apparently not always uniform. The differences may arise because of local obstruction of lymphatics by the pressure of œdema fluid or because the systems of deep lymphatics in certain laboratory animals differ from those in man. It follows too from MILLER'S description for man that if the deep lymphatics are fully distended, the superficial plexus should be likewise distended; but under experimental conditions this is not always so.[20] Such discrepancies may appear of minor importance but they must be explained if the results of animal experiments are to be applied to pathological processes in the human lung.

20. Trowell, O. A. *Quart. J. exp. Physiol.* 1943, **32**, 203.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.—The work carried on in the department of tropical medicine under the late Prof. Warrington Yorke is to be continued in two new departments which the council of the school have created. Dr. A. R. D. Adams is to take charge of the practice of tropical medicine and Dr. E. M. Lourie of research in chemotherapy.

MEDICINE AND THE CHURCHES

THE mistrust between orthodox religion and progressive science has limited the usefulness of both. "With increase of knowledge," writes Sir RICHARD GREGORY,[1] "much of the mystery upon which religious beliefs are based is revealed and new concepts have to be created to satisfy the rational mind. It is when there is a refusal to recognise the essential functions of progressive knowledge that conflict arises between religion and science." The changes associated with modern civilisation are, he points out, the results of scientific discovery and mechanical invention, and progress in these has never been encouraged by religious teaching. Certainly there has seldom been any noticeable zeal—on either side—for coöperation between the Church and medicine, and there are perhaps some problems of social life in which the Churches have not been willing to take their full share of responsibility. Happily there is evidence of a new spirit of alliance between medicine, the Churches, and education against preventable disease and in favour of attainable health, especially in the young.

Psychoneurosis is one of the major preoccupations of medicine today, and will still be one tomorrow. Some patients suffering from this disease require expert psychological help, but obviously many want more than that; to protect them from developing a chronic psychoneurotic state they need a philosophy that will support and reinforce them against the slings and arrows of outrageous fortune. Neither in church or school or clinic is such a philosophy easily come by; and those who aspire to provide it must have sympathy, great patience, knowledge of the world, and sanity of outlook. The efforts of a counsellor without these qualities are worse than useless—and they are not fruits that grow on every tree. Yet help of this kind is enormously valuable in the resettlement of many whose future happiness and working capacity hang in the balance. Without it they tend to "put on the strong armour of sickness"; whereas experience of men invalided out of the Services because of psychoneurosis indicates that, given the right kind of help, they can settle down to a useful life as successfully as their neighbours.

Improvement of the general health is coming to depend more and more on the coöperation of the individual. Religion and education can do much to foster the social sense—the attitude of the good neighbour—which is necessary to life in communities, and doctors are increasingly aware that their success or failure depends largely on social attitudes. Since this is so, they must resist the temptation to think narrowly in terms of their own specialty. Scientific ideas, like religious ideas, can be used in such a way as to restrict imagination instead of expanding it. The conflict between HUXLEY and WILBERFORCE at the Oxford meeting of the British Association in 1860 is felt by many to have created or perpetuated an unnecessary gulf between science and religion. It is not enough, they say, that this gulf should be bridged: the bridge could be used for joining forces in a united campaign for health of body and mind.

1. Gregory, R. A. Education in World Ethics and Science. Watts and Co., London, 1943.

Annotations

SULPHONAMIDES AND MENINGITIC SEQUELÆ

Maddock[1] has studied sequelæ in 1075 patients who recovered from cerebrospinal fever after chemotherapy. In every case the diagnosis had been bacteriologically proved; the nurses of the American Red Cross Harvard Unit Hospital paid the follow-up visits and either saw the patients or got information about them from relatives or neighbours. The time between discharge from hospital and the visit varied from 1 month to 2 years. In all, 254 (23·6%) complained of some disability dating from the attack. Headache was the commonest sequel, being present in 117. More serious symptoms were fortunately rarer; 6 had lost the sight of one eye, 1 of both eyes; 13 were totally deaf and 24 had impaired hearing. There was one case each of hydrocephalus, spastic paralysis and facial paralysis; 10 had strabismus; 18 were said to have changed in disposition and 9 children were retarded in development. Weakness of the legs was noted in 22, and muscular pains in 28. Other symptoms included errors of refraction, nervousness, irritability, poor memory, lack of concentration, easy tiring and depression. Maddock suggests that the list appears more formidable than the facts warrant, since these sequelæ are not all necessarily permanent. Headaches, for example, usually diminish in intensity and finally disappear. A group of 31 patients reported to have disabilities were fully examined by doctors 3–8 months after the nurses had made their visits; 16 of them had completely lost their symptoms and were in perfect health; in 7 the sequelæ reported had not been due to the illness; 2 had symptoms possibly due to meningitis but beginning to clear up; and in only 9 were there permanent sequelæ due to meningitis. The dosage of sulphonamide bore no apparent relation to the incidence of sequelæ, and Maddock supposes that in many patients damage to the central nervous system is probably done at the onset of the illness and is not affected by chemotherapy.

UNDER-WATER BLAST

An ingenious technique has been described by American workers for studying the effects of rapid compression waves on animals submerged in water. Since the results run closely parallel to those found by a number of observers[2] in man and animals exposed to depth charges, it looks as though the laboratory worker were now provided with a simple way of investigating under-water blast without the limitations and fuss imposed by the use of explosive forces.

Clark and Ward[3] describe a method of subjecting animals to shock waves in water by dropping a weight on a floating plunger. In one end of a steel U-tube filled with water or saline is loosely fitted a wooden plunger on which a rack carrying a falling weight, released from any desired distance, is allowed to fall. The anæsthetised animal is in the other end of the U-tube, within a tubular cage of hardware cloth or, if water surging is to be wholly avoided, in a tin can, open at the top and almost filled with water. The impact so produced sets up waves very like those generated by setting off an explosive under water, with primary "compression" waves of extremely short duration (1/5000 sec.) and no surge of water such as occurs when the gases of an explosive expand. By varying the weight on the rack and the distance of fall a great variety of lesions may be produced. Under extreme conditions the animals are killed in a few minutes; with lighter impacts they survive longer or recover completely. The immediate effect is a rapid slowing of the heart-rate and cessation of respiration for a few seconds to more than a minute, followed by laboured and ineffectual respiratory movements. Intrapulmonary bleeding sets in at once and may lead to early death. Although occasional animals show loss of corneal reflexes, ataxia and incoördination immediately after the blow, direct involvement of the central nervous system is exceptional and electro-encephalograms provide no evidence of concussion at the time of the impact. Autopsy findings in these animals are identical with those described by Cameron, Short and Wakeley[4] and Williams[5]: they include massive pulmonary hæmorrhage, bruising and hæmorrhage in the stomach, lower ileum and cæcum, with occasional rupture of stomach or intestines and hæmorrhage into the peritoneal cavity or lumen of stomach and intestines. As pointed out by the British workers, the solid viscera, in contrast to air-containing cavities, rarely show damage.

Some of Clark and Ward's conclusions may be briefly summarised. The greater the impact, the more damage to the animal; the larger the animal the less the effect for a given impact. The more hunched-up the animal is in the water, the less seriously is it affected. With incomplete submersion, only that part of the animal below the water level at the time of impact shows the typical lesions. (The work of Cameron, Short and Wakeley,[3] does not, however, bear out this conclusion.) Damage is greater to fully inflated lungs than to deflated lungs. Protective coverings, such as cork or sponge rubber life-preservers, save the regions covered from much of the effect of an otherwise fatal blow.

PREDETERMINATION OF SEX

Fluctuations in the sex ratio during war, discussed by Dr. Martin on p. 807, remind us how little influence we have with our posterity, even at the outset. Only in the present century has the mechanism of sex-determination been elucidated. Basically it is simple enough in man. The sex-chromosome pair in the female somatic cell consists of two equal members, the X-chromosomes. The male somatic cell, on the other hand, contains an unequal pair, consisting of one X-chromosome and a smaller Y-chromosome. When the gametes are formed, the members of each chromosome-pair separate, so that whilst all ova contain an X-chromosome, half the spermatozoa contain an X-chromosome and half a Y-chromosome. Should it chance to be an X-bearing sperm which fertilises the ovum, the result is a girl; should it be a Y-bearing sperm, the result is a boy. Many other living things exhibit an identical or very similar mechanism. It is not always, it is true, quite as simple as the scheme just outlined, but in no case can the primary determination of the sex of the new individual be termed really complicated.

It is one thing, however, to understand how a mechanism operates and quite another to control it. Many possible approaches have been attempted, though nearly always with negative results up to the present. The day is probably far off when the sex of the future child can be determined at will—or indeed materially influenced—in the desired direction. It has been shown, however, in animal experiments that a tendency to produce an excess of females or of males may be to some extent genetic; and generations of selective breeding can on occasion produce strains which do yield some preponderance of one sex or of the other. Furthermore, in drosophila much more definite means of predetermination have been demonstrated. Lethal genes have been discovered which are sex-linked and by introducing them into the X-chromosomes by breeding methods it is possible to ensure that some at least of the XY individuals, the males, do not develop. In fact, by utilising in addition genes which inhibit crossing-over (that is, the interchange

1. Maddock, E. C. E. *Bull. Min. Hlth & EPHLS*, 1943, **2**, 111.
2. See *Lancet*, 1943, ii, 133.
3. Clark, S. L. and Ward, J. W. 1943, *Surg. Gynec. Obstet.* **77**, 403.
4. Cameron, G. R., Short, R. H. D. and Wakeley, C. P. G. *Brit. J. Surg.* 1942, **30**, 49; 1943, **31**, 51.
5. Williams, E. R. P. *Ibid*, 1942, **30**, 38.

of genes between members of a chromosome pair) it is possible to produce strains which yield 100% females.

Recently, Gowen and Nelson [1] have announced the production of a strain the females of which produce 100% males, irrespective of the males to which they are mated. This result is due to a dominant gene whose action is limited to the female sex. Thus in drosophila, in one sense, complete sex-control is possible: stocks can be bred which yield offspring of one sex only, either females or males at will. The discovery of course can hardly be said to have any application to man. This is no simple matter of an injection or a pill, ensuring the arrival of a baby of the required sex. It hardly stirs the pulse to be told that some day, if the appropriate genes happen to be discovered in man, it might be possible after many generations of selective breeding to produce women whose fertilised ova of one sex or the other would die at a conveniently early stage. Primitive peoples, who eliminate unwanted babies as soon as they are born, would hardly regard the method as a practical advance.

ORIGIN AND PATTERN OF RETINAL HÆMORRHAGE

WHAT determines the distribution of retinal hæmorrhages in vascular disease and what is the anatomical reason for their pattern? In his Montgomery lecture to Irish surgeons Ballantyne [2] gives an answer to these questions based on ophthalmoscopic and microscopical findings. Three common causes of retinal venous hæmorrhages are choked disc, subarachnoid hæmorrhage, and thrombosis of the central retinal vein. The immediate cause of the hæmorrhage in all three is the obstruction to the outflow of blood from the retinal veins, and yet the distribution of the hæmorrhage is different in each case. Ballantyne explains that in healthy blood-vessels extravasation of blood through the vessel walls from back pressure will be chiefly where the vessel changes course or where it receives increased or decreased support from surrounding tissues. At the optic disc the vessels both change their course and lose support, so that when pressure suddenly rises, as in choked disc, the hæmorrhages will be situated at and around the disc. In subarachnoid hæmorrhage the rise of pressure is most sudden, and here the hæmorrhages arise not only in the retina around the disc but also in the orbit where there is lack of support for the vessel wall. Thrombosis of the central retinal vein causes widespread venous hæmorrhage throughout the retina. Here, while the actual blockage has been sudden, this is only the final phase of a progressive obstruction. The vein behind the lamina cribrosa has been gradually narrowing, and the circulation in the vein getting slower, with the result that the vein walls suffer from anoxæmia and become devitalised. At the moment of final obstruction the pressure, acting on the weakened walls, causes hæmorrhage throughout their length. The exact source of a small retinal hæmorrhage can often be estimated by closely observing its shape. Such hæmorrhages are chiefly found in the intervals between visible retinal vessels, which suggests that they are capillary in origin. An interesting picture of capillary hæmorrhage is that in which a blood-vessel passing through a patch of hæmorrhage is accompanied by a blood-free zone—a pale band on either side of the blood column. This blood-free zone closely corresponds to the capillary-free zone found on either side of the retinal arteries.[3]

It is common knowledge that striate, flame-shaped, or brush-like hæmorrhages take on this form because they are situated in the nerve-fibre layer of the retina, and the blood naturally tracks between the fibres which are here lying parallel to the surface. Such hæmorrhages come from the arterial side of the capillary system, and are often seen in hypertension. Hæmorrhages from the venous side of the capillary system are usually found in the deeper retinal layers, because the efferent veins of the retina are derived from the deepest capillary plexus. They are especially common in the outer molecular layer, where owing to the direction of the fibres the tissues tend to split in a vertical direction, allowing the hæmorrhage, as seen with the ophthalmoscope, to assume a punctate or petechial form. Hæmorrhages of the kind are well seen in diabetic retinopathy.

1. *Science*; 1942, **96**, 558.
2. Ballantyne, A. J. *Irish J. med. Sci.* October, 1943, p. 551.
3. Michaelson, I. C. and Campbell, A. C. P. *Trans. ophthal. Soc. U.K.* 1940, **60**, 71.

AGRICULTURE AND MILK

AFTER the war this country will again import large amounts of grain, sugar and other products more cheaply grown abroad; but if we are to raise the standard of nutrition British agriculture will have to provide more of the so-called protective foods—fruit, vegetables, eggs, and especially milk and dairy products. It does not follow that corn-growing and the traditional feeding for beef will fall below prewar levels; they may be higher. Each occupies an interdependent place in a system of mixed farming without which soil fertility cannot be maintained.

The war-time ploughing of millions of acres of permanent grass, much of very low quality, has produced arable crops; but there are already indications that it may easily lead to soil exhaustion which is being accelerated by the decrease in the number of livestock. Stapledon and Davies [1] nevertheless believe that it can do infinite good if we think in terms of sensible rotations and regrass as we go. Last year—and even more this year—there have been protests against the Ministry of Agriculture's policy of a larger and larger corn acreage, particularly in areas unsuited to corn production. Stapledon and Davies claim that the temporary ley (lea or sown pasture) will yield more animal food than the best permanent grass or any cereal, and will on the lowest estimate be equal to that of roots or kale. Even when these yields are transcribed into units of human food the temporary ley still compares favourably with most arable crops. Ley farming renders milk and corn production complementary, and it would cheapen milk production and make it less dependent on imported food-supplies. Some of the claims made for it may be disputed, but there can be no doubt that the policy of "taking the plough round the farm" is gaining in popularity.

If farmers have reasonable financial security and good technical advice they will no doubt respond to the nutritional needs of the nation, but the difficulties of their tasks and the inducement required should not be underestimated. At a discussion on milk held by the Nutrition Society some time ago Mr. J. L. Davies defined the three primary requirements of the milk industry as (1) a ten-year plan involving expenditure of £100 million on capital equipment urgently needed; (2) a large measure of control over the diseases of dairy cattle; and (3) an adequate supply of good labour for which a six-day week would be necessary. The risks from disease are greater in dairy-farming than in any other branch of livestock farming, and the control of tuberculosis and brucellosis, or even the production of clean milk, requires a degree of supervision unnecessary in other branches. Before the war milk production accounted for over a quarter of the total agricultural output, and milk was twice as important as any other single commodity; but if arable farming and livestock feeding are profitable over an extended period it is possible that fewer and fewer farmers will be interested in milk; as one of them said before the war, "If corn and beef production ever pay again I will gladly go into my dairy and smash every bottle in the place." The same applies to the men who milk the cows, either by machine or hand; there are

1. Stapledon, Sir G. and Davies, W. Ley Farming. Penguin Special, No. 99, 1942.

many who have worked a seven-day week for 52 weeks in the year for many years. Under these conditions standards of cleanliness tend to be low, and it is becoming harder to obtain cowmen—they would rather drive a tractor, work horses, or tend stock which at least do not need milking twice or three times every day.

It is clear that the production of milk of high quality requires increased expenditure of money and effort, and a high standard of labour, all of which imply an increase in the price of milk. On the other hand if the optimum amount of milk is to be drunk the price must be lowered rather than raised. Control of disease, improved management, and particularly increased efficiency in distribution, may keep down the price. But it is not unlikely that the subsidising of milk for priority consumers will have to continue.

CANCER

"One of the most hopeful features of the campaign against cancer is the fact that, in recent times, every year has made its special contribution to the sum of knowledge. When added together the contributions of the last ten years or so constitute a body of discovery so substantial as to justify the belief that the campaign is entering upon a new phase."

With this introduction the report rendered at the annual general meeting of the British Empire Cancer Campaign in Dec. 14 strikes an encouraging note. Three observations are picked out for special mention. One is the finding at the Royal Cancer Hospital that certain diets inhibit cancer of the mamma and cancer of the liver in mice. The second is statistical: an analysis of about 1000 cases of primary carcinoma of the lung reveals that the disease is four times as common in males as in females and that engineers, mechanics, and painters and decorators have a high incidence while clerks have a low one. Thirdly comes the confirmation of American statements that diethyl stilbœstrol inhibits the growth of prostatic cancer. This potent œstrogen, now widely used in clinical medicine, is an artificial substance synthesised by E. C. Dodds and his associates in 1938. It has been employed in cancer of the prostate by various surgeons in the United States and Canada in the hope that the secretory activity of prostatic metastases, like that of normal prostate, would be inhibited by the œstrogen. The cases mentioned in the present report are few. At the Middlesex Hospital one patient has been studied carefully for a year; at the Royal Cancer Hospital 2 patients seemed to derive no benefit either locally or generally, but in 5 others, which showed secondary deposits in bone, administration of stilbœstrol by mouth relieved the pain from these metastases, lowered the acid phosphatase level in the serum and also produced some degree of regression in the primary growth. This method of treatment is important in itself, for in England and Wales alone, Professor Dodds told the meeting, 4000 men die every year from prostatic cancer. But the chief significance of the work may lie in the fact that it is, in the words of the report, "possibly the first practical application of chemotherapy in the treatment of cancer." Stilbœstrol is a substance with many chemical affinities, and we may be sure they will be further explored.

THE HEART IN PREGNANCY

THE increasing care with which antenatal supervision is being carried out lends enhanced importance to the question of what constitutes a "normal" heart during pregnancy. The X-ray and electrocardiographic changes recorded in apparently healthy pregnant women have led to considerable controversy as to whether these indicate actual enlargement of the heart or merely an alteration in its position. In an attempt to clarify the issue, Hollander and Crawford[1] have carried out a routine examination in an unselected series of patients without any history, symptoms, or signs of heart disease who were first seen during the first 3 months of pregnancy. Anteroposterior and left and right oblique X rays of the heart were taken every 3 months during pregnancy and again 1 and 2 months after parturition; in addition electrocardiograms, using the two-string electrocardiograph thus obtaining simultaneous records of leads I and III, were taken every 4 weeks. As a result of rigorously excluding all patients who did not stay the course, their final observations are based on only 18 cases, but apparently the incomplete data in the other cases agreed with the findings in the fully investigated cases. The outstanding electrodardiographic changes were confined to lead III and consisted of a prominent, and even deep, Q wave and inversion of T, changes which occurred either together or separately. There was also a tendency for the electric axis deviation to show a shift to the left during the first 6 months of pregnancy and then swing to the right, the angle of axis deviation sometimes being as great as 28°, though it was usually nearer 15°. The important X-ray observation was the backward displacement of the œsophagus by the posterior surface of the heart, seen in 10 cases. Other changes noted were straightening of the left border of the cardiac shadow, prominence of the pulmonary conus, and an increase in the transverse diameter of the heart. The interpretation of these findings seems to be straightforward. The electrocardiographic changes are due to a shift of the heart to the left as a result of the raising of the diaphragm and rotation of the heart in the long axis. Cohn and Raisbeck[2] found similar large Q waves in lead III with rotating leads taken directly from the chest, and Thomson, Cohen and Hamilton[3] noted that the alterations in the Q and T waves were greater when the height of the diaphragm most affected the position of the heart. A strong argument against their being due to cardiac hypertrophy is that in Hollander and Crawford's experience the changes often disappeared towards the end of pregnancy. The radiological changes also can be explained on the basis of alteration in the position of the heart as a result of the raised diaphragm, but another factor probably comes into play here—the increased blood-volume which occurs during pregnancy and is accompanied by increased cardiac output. This attains its maximum at the 9th lunar month of pregnancy and then decreases steadily during the 10th month until by the 2nd month of the puerperium it has returned to normal.[4] Hollander and Crawford found that the indentation of the barium-filled œsophagus, present in the earlier stages of pregnancy, had practically disappeared by the 34th week of pregnancy. Their suggestion therefore seems valid, that this indentation is due to enlargement of the left auricle as a result of the increased volume of blood to be accommodated in the heart. These observations should facilitate the accurate diagnosis of early cardiac lesions during pregnancy and the puerperium.

THE ARMY COUNCIL has decided that serving medical officers may participate in organised discussions, and express opinion, both individually and collectively, on the Government's forthcoming proposals for reorganisation of the civilian health services. Provided the discussions are held in off-duty hours, and Service channels of communication are not used to promote meetings or transmit opinions, there is "not only no objection to but every justification for such discussions being held."

1. Hollander, A. G. and Crawford, J. H. *Amer. Heart J.* 1943, **26**, 364.
2. Cohn, A. E. and Raisbeck, M. J. *Heart*, 1922, **9**, 311.
3. Thomson, K. J., Cohen, M. E. and Hamilton, B. E. *Amer. J. med. Sci.* 1938, **196**, 819.
4. Thomson, K. J., Hirsheimer, A., Gibson, J. G. jun. and Evans, W. A. jun. *Amer. J. Obstet. Gynec.* 1938, **36**, 48.

Special Articles

SEX RATIO DURING WAR

W. J. MARTIN, PH D LOND

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ONE of the best known features of vital statistics is the excess of male over female births. This phenomenon, as far as can be judged, has been permanent and common to mankind in general, though variations in the average size of the ratio occur in different periods and between various races. Tschuprow,[1] in a paper discussing the fall in the size of the sex ratio in many European countries, including England and Wales, during the last half of the 19th century and the first decade of the 20th, propounded the hypothesis that the size of the sex ratio was negatively correlated with the number of miscarriages and stillbirths. The male prenatal mortality was very much larger than the female but sufficient data were not available to establish that variations in the size of the sex ratio were mainly due to these factors.

It is well known that the ratio is susceptible to large social disturbances and in the years immediately after the war of 1914–18 there was a considerable rise in the sex ratio of all the belligerent countries. No completely satisfactory reasons for this rise have been advanced. In England and Wales the sex ratio, which had varied between 1032 and 1049 during the 60 years 1859–1918, rose in 1919 to 1060 and remained above the prewar level during the next two years with values of 1052 and 1051. A high sex ratio has also been recorded during the present war; the ratios, 1939–42, were 1050, 1058, 1054 and 1061. The last value is the highest ever recorded since the introduction of registration in 1838.

The war periods have also, in common, a very high marriage rate, the highest rates per 1000 of the population ever recorded being during these periods. The marriage rates during 1914–21 were 15·9, 19·4, 14·9, 13·8, 15·3, 19·8, 20·2, 16·9, and for 1938–42 they were 17·6, 21·2, 22·7, 18·7, 17·8. The mean marriage rate for the 102 years 1838–1939 was 16·1, and the only years when the rate exceeded 17·9 were during these two war periods. No correlation has been established between the large increase in the marriage rate and the sex ratio during 1919–20 owing to lack of data. Age of parents was not given in the birth certificate and the relationship between sex ratio and parental age had to be inferred from data relating to very small communities, or in more recent years from the data relating to the registration area of America where the ages of parents were included in the particulars of birth registration. Russell[2] found from an examination of American births that the sex ratio was not related to age of mother but that a slight association existed with the age of father. His values were :—

SEX RATIO OF BIRTHS AT VARIOUS PARENTAL AGES

Parent	15–20	20–25	25–30	30–35	35–40	40–45
Mother ..	1059	1059	1059	1052	1058	1052
Father ..	1065	1063	1059	1058	1053	1050

It is now possible, with the tabulation of the first fertility statistics of England and Wales relating to 1939, to make a direct approach to the problem. The births were tabulated by age of mother but not by age of father, and the sex ratios were :—

Under 20	*20–25*	*25–30*	*30–35*	*35–40*	*40–45*	*45–50*
1062 ..	1063 ..	1047 ..	1053 ..	1034 ..	1025 ..	962

The values exhibit a steep decline with increasing age, although the continuity is broken at ages 30–34, and are in marked contrast with the American ratios. The difference between the trends of the two countries may be due to the different distribution of births: in America the family is larger and the mother's age is lower than in England and Wales. The first births formed 36% of all American births in 1936, and 42% of the legitimate births in England and Wales during 1939; 70% of the American first births were born to mothers aged less than 25 years, while only 42% of the English first births were born to mothers in this age-group. Despite this large difference, first births in England and Wales formed 67% of all births to mothers at ages under 25, while in America the percentage was only 57. It cannot be determined whether the above trend in England and Wales is typical of the average experience or not, since statistics for the years subsequent to 1939 are not yet available, but it seems probable in view of the large number of births involved—over 600,000—that the sex ratio will be found to have a similar trend. Russell found from 6,000,000 American births that the sex ratio declined with order of birth until the fifth birth, when it tended to a constant value; the ratios were 1061, 1060, 1058, 1055, 1051. The same trend was shown in France[3]; the sex ratios based on nearly half a million births were 1075, 1037, 1051, 1039, 1035 and only 1022 for the sixth rank and over. No data are available to determine whether age of mother is a factor in the size of the ratio within the rank of birth, but that it is probably so may be indirectly inferred from the French data. The sex ratio of the first births declined with increasing age of father; for the age-groups under 25, 25–34 and 35–49 it was 1081, 1074, 1059. This relation possibly holds for age of mother, since there is a fairly high correlation between age of husband and wife. On these assumptions the high sex ratio during the war periods can be explained in part if not wholly, since a very high marriage rate prevailed in both periods and a sustained increase in the number who marry means a lower average age at marriage. The average age of mother at maternity would decrease and the proportion of births to young mothers would increase. 35% of the first maternities during 1939 occurred within one year of marriage and 61% within two years, with a consequent rising of the sex ratio.

1. Tschuprow, Al. A. *Bull. Inst. int. Statist.* 1915, **20**, 378.
2. Russell, W. T. *J. Hyg., Camb.* 1936, **36**, 381.

MATERNITY SERVICES IN LONDON

A SURVEY WITH RECOMMENDATIONS

A VALUABLE report has just been issued [4] on behalf of the voluntary hospitals and district nursing associations undertaking maternity work in the Greater London area; it gives a careful survey of existing facilities for maternity work in London, and makes recommendations for improving them.

HOSPITAL ACCOMMODATION

A maternity service, it is held, should be local in character, and while beds in central London are sufficient, provided they are adjusted to ensure adequate teaching of medical students, additional beds are needed towards the boundary of the LCC area and in Outer London. There is room for both maternity hospitals and maternity departments at general hospitals. A maternity hospital should have a minimum of 100 beds, and a unit in a general hospital a minimum of 50 beds; where population warrants it, larger units should act as key-hospitals for the area. In Outer London a number of appropriately distributed small units should work in close association with key hospitals, which would reserve beds for emergencies and complicated cases. Mothers who had previously had abnormal pregnancies, primiparas, and those with unsuitable home conditions should have first claim on these beds.

All maternity hospitals should have their own pharmacies, X-ray and pathology departments, and should offer adequate facilities for research.

The numbers of private beds in maternity and general hospitals should be increased.

3. Statistique générale de la France, statistique des familles en 1906. Paris, 1912.
4. The London Maternity Services Joint Committee which has drawn up this report came into being some years ago to link up the maternity work of voluntary hospitals and district nursing associations within the Metropolitan Police District. The committee has 26 members, half of them medical, under the chairmanship of Mr. James Paterson (City Maternity), with Mr. A. G. L. Ives, secretary. The report has been drafted by a subcommittee of 8, of which Dr. H. K. Waller and Mr. J. M. Wyatt, FRCOG, are members, with Prof. T. B. Johnston, MD, as chairman. It is being circulated with the support of King Edward's Hospital Fund for London and the concurrence of the British Hospitals Association as a basis for discussion with the Ministry of Health and the municipal bodies concerned. The committee's address is 10, Old Jewry, E.C.2.

At least one additional isolation unit, to be situated in South or South-east London, is needed; and every unit should have isolation beds for suspect cases. Cases of abortion should be under the care of a gynæcologist. All maternity units should plan accommodation so as to be able to admit any of their own booked cases which abort; other cases should be fairly distributed between the gynæcological units of voluntary and municipal hospitals.

There should be close liaison between voluntary hospitals and local authorities in planning new accommodation, so as to avoid overlapping.

TRAINING OF DOCTORS AND MIDWIVES

The Royal College of Obstetricians and Gynæcologists consider that medical students should take their midwifery courses at their own medical schools, which means that each teaching hospital should have a maternity unit of about 80 beds. Until necessary building can be completed existing arrangements with LCC hospitals should continue. Provided cases are carefully apportioned there is no reason why the same institution should not undertake the training of both medical students and pupil midwives.

If there is a shortage of domiciliary cases, existing districts at present not recognised for training should be combined into units large enough to conform with requirements. Postgraduate courses for doctors and midwives should be greatly extended at maternity hospitals and general hospitals with maternity units.

ANTENATAL CLINICS

Where a hospital accepts patients from the clinics of a local authority, the expectant mother should be sent to the hospital antenatal clinic for her first general examination, not later than the 32nd week of pregnancy.

The medical officer in charge of the municipal antenatal clinic should have held a resident appointment in a maternity hospital. Arrangements should be made so that the practitioner called to a midwife's case in an emergency shall have seen the patient beforehand and examined her at the 32nd and 36th week. Antenatal clinics should be closely linked with the nearest maternity unit so that special examinations or consultations can be arranged. Health visitor and midwife should coöperate and agree in the advice they give the patient. Dental clinics should be provided in connexion with all antenatal clinics.

DOMICILIARY MIDWIFERY

A patient choosing to be delivered at home by the district service of a voluntary hospital must understand that in need the midwife will call in one of the hospital obstetrical staff. In other cases there should be a rota of doctors who can be called in; they should have examined any of the midwife's cases for which they have taken responsibility.

A home-help service should be available, and resident nurseries for young children of a woman during confinement. Mobile obstetric teams should be available to small maternity units and for the patient delivered at home.

POSTNATAL CARE

Care of the newborn has not kept pace with advance in other aspects of obstetrics. Prof. Chas. McNeil of Edinburgh was called in to discuss the task of providing better safeguards for the baby in the early weeks of life.

Maternity units should appoint a pædiatrician to work in close association with the obstetric staff. Maternity units should be more generously staffed with nurses. Health visitors should see the mother a day or two before she is due to leave the maternity ward, or at home before the midwife ceases to attend.

The pædiatric staff of the maternity unit should, through the MOH, take some share in the organisation and clinical work of welfare centres, and breast-feeding clinics should be held daily. Postnatal clinics should review the mother's health during lactation. Postnatal and child welfare clinics should be held at the same time and place.

Convalescent homes should be provided for mothers who need extra rest, and should have a toddlers' wing.

A SINGLE UNIFIED SERVICE

Continuity of care and responsibility cannot, it is concluded, be achieved under divided control. An area Maternity and Child Welfare Board for Greater London should be appointed by the Minister of Health, with representation of voluntary hospitals, consultants, general practitioners, county and borough councils (including the MOH's) and other welfare authorities, district nursing associations, health visitors and midwives. There should be a small executive of leisured people, with professional and technical advisory panels. A central bureau for collecting daily information about vacant beds might be its first concern. It is hoped that the scheme will be fitted into the coördinated hospital services which are now the immediate concern of King Edward's Fund and the Voluntary Hospitals Committee.

THE EDUCATION BILL

THE far-reaching measures foreshadowed in the Government's white-paper *Educational Reconstruction* in July are embodied in the new Education Bill, published on Dec. 16 (HMSO, pp. 98, 1*s.* 6*d.* Explanatory memo. Cmd. 6492, pp. 14, 3*d.*). The bill gives the President of the Board of Education full ministerial powers, though he will retain his present title, establishes two central advisory councils for education, one for England, the other for Wales and Monmouthshire, provides for the raising of the school-leaving age to 15 on April 1, 1945, and to 16 as soon as the minister sees fit, and makes part-time education, equivalent to one day a week, compulsory for young people up to the age of 18.

The white-paper promised substantial modifications in the provisions for blind, deaf and otherwise handicapped children made in the Education Act of 1921. The new bill extends the duty of ascertainment, now confined to defectives and epileptics, to all children needing special education, including maladjusted children. An important change is that certification is no longer required before a physically or mentally defective child can receive suitable instruction; no child will be certified as mentally defective while he remains within the education system. Local education authorities will be obliged to provide special education for the less seriously handicapped children in the ordinary schools and for the more seriously handicapped in special schools. The age for compulsory attendance at such special schools will be lowered from 7 to 5 years, and parents of a child over 2 years will have the right to ask for their child to be medically examined with a view to special education. Much of the special educational treatment for handicapped children is now supplied by voluntary bodies, and the bill will enable local authorities or the minister to assist these bodies financially.

The bill imposes on local authorities the duty of providing not only for medical inspection as at present, but also for treatment of all pupils at maintained schools and young people's colleges, free of cost. It also makes it a duty of local authorities to provide meals and milk in their schools, and gives them powers to supply boots and clothes for needy children. Independent and direct-grant schools may be included in the arrangements for medical inspection and treatment, as well as school meals and milk, but the expense to the local authority must not be greater than would have been incurred at a maintained school.

The raising of the school-leaving age necessitates changes in the law relating to employment, for the existing acts only refer to the employment of children under 14. The bill empowers local authorities to prohibit or restrict the employment of any child attending a county, auxiliary or special school if it would prejudice his health or education, so that the restrictions of the Education Act of 1921 can be fitted to the new leaving age. As regards limitation of hours of employment, overtime payments and so on, the time spent at a young people's college will count as in working hours.

Dr. DONALD CAMERON, professor of neurology and psychiatry at the Albany Medical College, NY, has been appointed to the chair of psychiatry at McGill University and psychiatrist in chief to the Royal Victoria Hospital, Montreal. Dr. Cameron graduated in medicine from the University of Glasgow in 1924.

In England Now

A Running Commentary by Peripatetic Correspondents

THERE was an old song whose chorus began, "At six o'clock on a shining morn we start our little day"; our newest nursing probationer remembered it when she arrived breathless and breakfastless on Ward X at 0746 hours—precisely a minute late. Excuses? Well, her billet is half a mile from the hospital, she has a cold little room at the top of the house, and unless she wakes herself up early, it's just too bad. Breakfast at the hospital is at 7 o'clock—all the nurses take all their meals in the hospital—and at this time of the year it isn't light until 8.30. This little personal problem appeared to be easily soluble when she saw an array of cheap alarm clocks in a local shop, and on her first off-duty spell she went in to buy one. But alas she had to confess that she was not a factory worker and came out empty handed. She went to Matron, who gave her a chit to say that she was a hospital nurse, lived in a billet and had to be at the hospital at 0700. Even this didn't help; the clocks were for factory workers starting work before 0500. Was the shopkeeper right? Or perhaps nurses are not really essential war workers until they are state registered or perhaps the various Government departments concerned haven't thought of this one. It's a very small one, but these little things count, even in war-time. The days of the "knocker-up" have passed; more's the pity.

* * *

An English-speaking Basuto was recently admitted as a mental patient "NYD." When questioned as to the cause of his rather alarming behaviour he said he had been in the habit of sending his pay home to his wife until he heard that she was no longer faithful to him, when he ceased to do so. A few months later he received a letter on behalf of his mother-in-law telling him that she was very angry with him, and had consulted a witch doctor who had "thrown the bones against him"—the acme of local witchcraft, apparently. As he is a Christian he affected not to be disturbed by this, until a few days later when he received a further letter containing a few apparently meaningless scribbles, which he felt sure was a spell from the witch doctor himself. The immediate physical effect of seeing this was an acute pain in his chest and an irresistible impulse, which he gratified, to run to his major's quarters and fire his rifle several times. This done he sank into a condition of apathy from which it was difficult to rouse him. No ordinary treatment seemed to influence his progress so I consulted the CO of the attached Basuto wing as to the possibility of finding a witch doctor among the various dock pioneer companies who could reverse the spell. He agreed to try, and rather to my surprise wrote an official request to the area commandant that a witch doctor should be available on the following Saturday. A reply was received from one of the companies as follows—

Subject: Voodoo.

> Ref. your memo undated I regret that no witch doctor is at present available in this Group. They are now in short supply—the classes now called up are not so standard—and the only specialist of this subject available has regrettably left his bones behind, without which he cannot fully exercise his art.
>
> (Signed) X Y, Lieut.-Colonel.

A matter-of-fact reply agreeing to do as he wished was, however, shortly received from another company through the usual official channels, and I was duly rung up to attend the ceremony. The medical specialist walked over with me, and we found the "doctor" with twelve husky negroes squatting in the centre of the small hospital parade ground awaiting us, to the intense interest of the native staff and patients. There was nothing particularly impressive about him—unless it was his girth—and he got up and gave us a moderately smart salute, calling his band to attention, which seemed slightly incongruous behaviour in one possessed of such occult powers. It was disappointing that he had not turned up in paint and feathers heralded by tom-toms. We went over to an empty tent which he agreed was suitable, and through the native medical corporal he was told that we wished him to drive the hoodoo out of the patient who was sitting in front of him. His attendants then surrounded them, and he looked at his victim for some time, in a rather dissatisfied way quite silently. Then he produced a small orange-coloured bag from his pocket, and slowly took out a Gold-Flake carton containing some white powder, and part of a dried goat's ear. He placed some of the former in each of the patient's nostrils, and we watched the patient in rather tense silence for another 10 minutes. At the end of this he announced through the interpreter that this was the wrong sort of spirit—he was used to those of Bechuanaland, and not those of Basutoland. We asked him whether if he could return another day with a stronger medicine it would be of use, and to please us he agreed to return next day. The CO next appeared with a case of hysterical paralysis of the arm in a young Zulu, and the long period of inspection, with nasal insufflation, was repeated. The witch doctor then said he thought this was a white medicine disease, and not for black medicine. We disagreed, and said that we were sure that he could cure it. He then searched the little bag again, and this time produced a Gillette razor-blade and scarified the affected arm on the back of the wrist, over the external condyle of the humerus, and at the insertion of the deltoid. A red powder was then rubbed in, and the patient was again watched intently. Once more, however, nothing happened, and the patient returned to his ward in triumph. I think paint and feathers would have done the trick.

The job of the twelve attendants, who took no apparent part in the proceedings, is to give a great shout at the first appearance of the offending spirit so that in its fright it will leave the victim. For the second session he turned up without them, which seemed to indicate a defeatist attitude, and this was justified by the uneventful séance. But his powder did succeed on this occasion in making the patient sneeze a good deal, which the doctor said was a very good sign.

As we walked back we wondered whether we are "covering" an unqualified practitioner, or whether the GMC will take the view that witch doctors are "medical auxiliaries." Anyway it has varied the therapeutic monotony of our lives.

* * *

Foreigners are always welcome at No. 1, Wimpole Street, but they rarely outnumber the English. At the first meeting of the European Association of Clinical Pathologists the British were only in a small minority. About ten different languages could have been heard but only English was spoken, and a good English too. The only exception was at the dinner, when a French member insisted, as was his right, on speaking his own language; for many of us it was a joy to hear again such musical words. The meeting was for the dual purpose of scientific discussion and social intercourse, and we all came away with one regret—that the chairman had been bound to work away with his green, amber and red lights to keep the speakers within their short time limit. The dinner the night before had gone off very well; a convivial and friendly atmosphere had been soon established. This was only to be expected from people who have formed themselves into an association whose main aim is to further a spirit of amity and coöperation between the medical communities of Europe. Such gatherings should make more people appreciate how pleasant it is to be a good European.

* * *

Outside the windows of the treatment-room of our young and keen psychotherapist runs a narrow passage where passing patients and nurses used to chat and joke and laugh, thus disturbing the ceremonial progress of free association. After he had convinced the chief that something had to be done, things became quiet for a few days; until one morning when chatter and noises seemed unending. He angrily dashed to the window, but retired quickly when he saw the workmen in lively discussion where and how they should fix the notice: "Silence. Treatment in progress."

* * *

In one of the semi-official social surveys, the examined people had to fill in a questionnaire headed by the words age and sex. The lady social worker was somewhat embarrassed when she saw a young labourer writing under sex: "Sometimes."

Letters to the Editor

INFANTILE D AND V

SIR,—During the spring and summer of this year, when diarrhœa and vomiting in infants was prevalent, we had the opportunity of observing and treating a consecutive series of cases in a London isolation hospital, and our experiences may be of interest in view of your leading article of Dec. 18.

This series of 120 cases, all under 15 months of age, fell into two groups. In the first group of 61 cases (24 dehydrated) treated between April and mid-August inclusive, there were 8 deaths, giving a case-mortality of 13·1%, or 33·3% in the dehydrated cases. In mid-August the routine of treatment was altered by the early addition of human serum to the intravenous drip. In the second group of 59 cases (27 dehydrated) treated between mid-August and November inclusive, there were no deaths; there was also a striking reduction in the length of stay of these infants in hospital. The main points to be observed are:

1. Detailed examination on admission, including an accurate history.
2. Early recognition and treatment of dehydration.
3. Search for, and early treatment of, infective foci.
4. Nursing in a cubicle or by strict bed-isolation technique.

On admission, all infants are given ½-strength Hartmann's (Ringer-lactate) solution by mouth for 12–24 hours, depending on the amount of vomiting. Vomiting usually ceases within 24 hours, after which the infants are put on a dilute feed, beginning with a 1 : 8 mixture of the milk preparation in Ringer-lactate. We have made it a practice to give the infant the kind of food which he had before admission, unless there is some definite contra-indication. The feeds are gradually increased in strength until the infant is on a full-strength milk diet, usually in 5–7 days.

If dehydration is present, fluid is given intravenously without delay, using a Bateman's needle which is tied into an arm or leg vein after cutting down. At first, ½-strength Hartmann's solution is given, with or without the addition of 5% glucose, and the fluid is allowed to drip rapidly (about 30 drops per min.) for the first half-bottle (300 c.cm.). Pooled human serum is then added to the Hartmann's in equal parts (so as to obtain a half-strength dilution) and the rate of flow slowed to 8–15 drops a minute. As a rough guide it may be said that infants under 3 months require a slow flow of 8–10 drops per min., while older children will tolerate a flow of 12–15 drops per min. But in practice it is necessary to judge each case individually. The rate of flow, and the total quantity of fluid given, needs to be adjusted according to the weight of the baby, the degree of dehydration, the degree of pyrexia if any, and the amount of fluid which the infant is able to take by mouth and retain. The drip is continued, giving alternate bottles of Hartmann's plus serum and ¼-strength Hartmann's, until dehydration is completely corrected, the stools are less profuse, and the infant is able to tolerate a dilute feed. This is generally in 1–3 days. If vomiting persists, all feeds by mouth are stopped for at least 12 hours and the amount of parenteral fluid is increased. Feeding is then recommenced with ½-strength Hartmann's as previously described.

If the infant is very collapsed on admission, as may happen with a severely dehydrated baby who has had several hours of waiting in an outpatient department followed by an ambulance journey, treatment is instituted exactly as for "surgical shock." Warmth, stimulants such as brandy and nikethamide and oxygen are given, and the infusion is begun immediately. For this purpose, a cutting-down set is always kept ready sterilised. We cannot stress too highly the urgency of treatment in such cases.

This routine and the choice of transfusion fluids are based on the following clinical observations.

1. Most infants with D and V respond well to a preliminary period of starvation, provided it is not too long and that sufficient fluids are given.

2. When dehydration is present, it is essential to deal with it early, since long-continued dehydration may cause irreversible damage, and the chances of recovery appear to be in inverse proportion to the duration of dehydration. We should point out that with older and fatter babies, in whom the classical signs of fluid-loss are less apparent, there is no wrinkling of the skin, but the dehydration with loss of tone and elasticity becomes obvious if a larger fold of skin (which includes the subcutaneous fat) is pulled up between the fingers. It has also been our experience that profuse watery diarrhœa is a more important factor than vomiting in producing dehydration.

3. When dehydration is severe or of long standing the situation is urgent, since there is almost certainly loss of plasma-proteins and the condition is akin to surgical shock. All workers are familiar with the type of dehydrated infant who at first responds well to a transfusion of saline or Hartmann's, and then develops œdema in spite of the fact that he is still dehydrated. Assuming this to be due to lowered plasma-proteins it would seem reasonable to give the infant extra proteins as soon as possible. In practice, it is simpler to use a ½-strength solution of human serum or plasma, as this obviates the technical difficulty of getting the rather sticky full-strength fluid to run through a slow drip, and also avoids the danger of approaching the unknown point at which tissue œdema begins although dehydration is not yet corrected. Because there is often difficulty in getting the drip to start, especially if the infant is very collapsed, it is advisable to begin with the half-bottle of Hartmann's.

It is necesary to pay very close attention to the infant during intravenous therapy; at the earliest sign of œdema—puffiness of the hands and feet, eyes, scrotum or vulva—the fluid must be discontinued immediately. There is certainly danger of "drowning" an infant with too much parenteral fluid, but with careful watching this can be avoided, and it is still a far smaller risk than allowing an infant to remain dehydrated for a long period.

It need hardly be said that it is essential to look for and treat any focus of infection. Sulphonamides, especially sulphadiazine, were found to be of great value when given early and in adequate dosage. Special attention must also be paid to the ears, and myringotomy, and if necessary mastoidectomy, must be performed early.

A prerequisite for success with this simple routine is a conscientious and coöperative nursing staff; without the hard work and intelligent collaboration of the sisters and nurses of the barrier-wards in which these infants were nursed, these results could not have been obtained.

Our thanks are due to Dr. W. Gunn, the medical superintendent, and to Dr. Robert Cruickshank of the North-Western Group Laboratory for their advice and encouragement.

M. B. ALEXANDER.
Y. EISER.

North-Western Hospital, LCC.

WORK FOR THE DISABLED

SIR,—The Disabled Persons (Employment) Bill marks three important developments in the formulation of policy on rehabilitation. It defines a "disabled person" as one "who on account of injury, disease or congenital deformity is substantially handicapped in obtaining or keeping employment or in undertaking work on his own account, of a kind which apart from that injury, disease or deformity would be suited to his age, experience and qualifications"—a definition which can be compared with that of the Danish Invalidity Law which adopted as its standard inability to earn more than one-third of the wages normally earned by an ordinary individual of comparable status without disability. The bill makes provision for the preparation of a register of disabled persons and it lays down machinery whereby employers with more than 25 workpeople may be compelled to find employment for a quota of men whose names appear on that register. And the Minister may, after consultation with employers and workers, reserve certain classes of work for the exclusive employment of registered persons. These far-reaching principles open up a new approach to the welfare of disabled persons who are now to enjoy "under adequate medical supervision and under circumstances conducive to the restoration of fitness" facilities for physical training, exercise and occupation under the direction of a National Advisory Council with a series of district advisory committees.

Wisely used, these provisions should go some way towards the recognition of the fundamental importance of medical skill and interest in the well-being of the disabled. But it is a pity not to have brought in, besides the pooled experience of interested individuals and societies, the whole weight and authority of the government departments concerned with social medicine and education. There was a great opportunity here of doing something tangible towards the provision of a really comprehensive health service for members of the community who badly need its care, and it would be an act of statesmanship on the part of the Minister of Labour to make it clear that it is his intention to approach the rehabilitation of the disabled along the broadest possible lines. That, as your leading article last week set out so convincingly, is the essential thing. Don't label disablement, get your man fit enough to forget it. The issue cannot be tackled successfully as a purely industrial one.

ARGUS.

QUIZZING THE PHYSICIANS

SIR,—The interim report of the social and preventive medicine committee of the Royal College of Physicians of London (subject of a leader in your issue of Oct. 30) is an interesting document, apart altogether from its intrinsic value as a contribution to medical education. The synchronisation of its publication with that of the College's committee on psychological medicine throws into prominence the curiously differing constitution of the two committees. The latter, for instance, has 20 members, compared with only 13 on the former, but the most striking difference is the paucity of clinicians, and especially consultants, on the social and preventive medicine committee; there are 3 MOH's, 1 professor of public health, 1 American attached to the Ministry of Health, 1 whole-time member of the scientific staff of the MRC, 1 whole-time professor of medicine and 1 statistician. What is the significance of this? Lack of interest of the clinicians in the subject seems the obvious reply, though perhaps there is some more subtle explanation. However that may be, perhaps the paucity accounts for certain features of the report.

As a clinician I resent the statement that "Social medicine represents a relatively novel point of view," especially when at a later stage the committee define the main purpose of the curriculum in preventive medicine as being "to lead the student to the study of man in his environment—of the person or patient in relation to his family, industrial and social background." What on earth have some of us been teaching for years to our students except this very thing? What would have been left of our teaching if we had had to omit all reference to the influence of working and home conditions on the patient with a peptic ulcer, or of housing on the rheumatic child?

In the proposed curriculum there are several curious suggestions, presumably arising out of the attempt to be intensely practical, but resulting in a rather unbalanced programme. Climatology may not be of immediate importance to the student, but it is certainly a subject he should know something about. Similarly the rather scathing comments on genetics are more than surprising these days, and I can conceive of no part of the curriculum in which instruction in this vital subject could be more satisfactorily included than social medicine. Equally surprising is the suggestion that such important subjects as ventilation, sanitation, &c. should be more or less ignored.

I must confess also to disappointment at the lack of style in the language of the report. Perhaps we have been spoiled by the magnificent language of the Beveridge and the Scott reports, but one would have thought that an institution with the traditions of the RCP would have picked up at least an echo of the resounding phrases which some of the fellows of old used.

The psychological medicine report says: "this teaching must be limited . . . it must be solid, because the student is too raw to be able to profit by debatable speculations about human nature." And yet we consider ourselves a well-educated profession! What about these same students' contemporaries in other faculties studying, and understanding and discussing, the intricacies of philosophy, logic and mathematics? Are they too raw to profit by "debatable speculations about human nature?" Must they be forbidden Plato, Socrates, Hume, Berkeley and Kant, and confined to potted versions of the originals served up by their tutors? Or are we to take this as the official opinion of the College on the intellectual standards of our students?

Finally I must pick a bone with the committee in their delineation of the qualifications of a professor of social and preventive medicine. "A brief clinical experience" is sufficient, but he must have "formal training in public health," "experience in public health work" and "familiarity with practical public health activities," and, while "interest and training in research are highly desirable, . . . it is considered immaterial whether this training be in epidemiology, bacteriology, nutrition, child health, social science, or in a field like tropical medicine." Not a word about clinical science. Many of these desiderata are admirable, but, at least in these days of transition, a sound clinical training both in research, practice and teaching is surely the first essential of such a professor. Unless he has such a background he will never be able to teach "medicine" of any description, he will never adequately appreciate the problems of individual patients and their reactions to their environment, and, perhaps as important as anything at this stage, he will never earn the coöperation of his colleagues, the clinicians. The details of public health administration can be acquired with relative ease, the work of voluntary organisations is already known to the experienced clinician, and his training is such that he could very easily assimilate these subjects and knit them into a single whole. The public health administrator, however, will seldom attain this ideal because the vital aspects cannot be learned from the books, but only as a result of long and often bitter training in the hard school of clinical medicine.

BEDSIDE TEACHER.

THE GOVERNMENT AND THE PROFESSION

SIR,—The letter in your issue of Nov. 20 might give a wrong impression of the views of the medical practitioners of the Highlands and Islands area of Scotland. Dr. Leys, who is physician specialist for the northern counties of Scotland under the Highlands and Islands (Medical Service) Scheme, circularised several of his colleagues, general practitioners and public health officials, within the area of his appointment asking them if they would sign this letter. He did not circularise all his colleagues, myself for example, but only a selected few such as our MOH, the secretary of the local division of the BMA, the president of the Northern Counties Branch of the BMA, &c., men whose names as signatories to his letter, if they approved of it, might give it an appearance of representing the views of the area. Not a single practitioner or medical official in the counties of Caithness, Sutherland, Ross-shire, or Morayshire signed this letter, nor do we find the Orkneys, Shetlands or Hebrides represented among the signatories nor the Burgh of Inverness nor the consulting staff of our central hospital, the Royal Northern Infirmary, apart from Dr. Leys himself. The county of Inverness is represented by two general practitioners from Fort William, and four from the Island of Skye. Would it not have been a more Highland-like letter if Dr. Leys had given your readers, even as a parenthesis, a list of those colleagues who refused to sign his letter, and also, to save paper, just the number of medical practitioners and medical officials in the Highlands and Islands area whom he did not circularise? The bracketing of places of residence after the names of the signatories is likely to mislead.

We have a very fine national service in the Highlands and Islands, a service applauded by the League of Nations and by the many from the Dominions and abroad who have visited us. A meeting was recently held in Inverness open to all practitioners within the Highlands and Islands area. It was the duty of all who wished our service changed to be there and to state their views. It was one of the largest meetings of medical men and women ever held within our area, with representatives from all our northern counties. Not a single person present asked for a salaried state service under local authorities. All felt that to be dominated by local authorities would be the ruination of our service. We appointed a delegate to meet the powers that be in Edinburgh. After the Secretary of State heard Dr.

Leach's statement, Dr. Leach was assured that the identity and character of our service would be maintained. A week ago we had a meeting of elected representatives of the Highlands and Islands subcommittee of the BMA, with representatives from Caithness, Sutherland, Ross-shire, Inverness-shire, Argyll and the Burgh of Inverness. Every person present agreed that our service should be maintained as at present, and valuable suggestions were put forward for its further improvement. This is not the opinion of medical practitioners alone; it is the opinion of the people whom we serve. We do not wish our service ruined, or even belittled by people who know nothing of our past, our sufferings, and what this service has meant in giving hope to our people, and relieving them of much of the suffering that their forbears had to go through. We have a service of which we are proud to be members in spite of our isolation.

Tain, Ross-shire. ENEAS K. MACKENZIE.

FEEDING WITH AMINO-ACIDS

SIR,—Your editorial on feeding with amino-acids (*Lancet*, 1943, i, 143) has provoked discussion, and one of the authors mentioned therein has already taken exception to your comments (*Ibid*, 1943, ii, 275). As the first one to use amino-acids in the human as a method of intravenous protein alimentation, I was struck immediately with the fact that your leader seemed to misunderstand many fundamental considerations regarding parenteral therapy and about clinical research in this country. While my first impulse was to take up these misunderstandings in turn, I would prefer to express rather my personal pleasure at the publication of this editorial because it means that this new therapeutic procedure, which was started in this country nearly 5 years ago, has already been deemed important enough to be discussed (though somewhat belittled) by our esteemed English contemporaries.

Parenteral injections have perhaps reached a wider use in this country than elsewhere, although their value in lowering surgical mortality and minimising surgical complications is recognised everywhere This is true because such injections not only correct serious biochemical deficiencies but actually meet several daily nutritional needs of patients temporarily unable to take anything by mouth or in whom the oral ingestion of fluid or food would prove deleterious. The addition of appropriate amino-acid mixtures to the four other nutritional elements now extensively used enables the surgeon to avoid many of the deleterious effects now known to follow protein deficiencies, particularly post-operative hypoproteinæmia. In fact, this new procedure is a physiological short-cut, circumventing the need for the gastro-intestinal tract so often temporarily out of commission. Plasma transfusions, true enough, may also be used to give parenteral protein nourishment and have many advantages, particularly in acute hypoproteinæmia, but are scarcely as physiological, nor as inexpensive or convenient, as an injection of an appropriate mixture of amino-acids. Amino-acid mixtures have also been given by mouth but only to spare digestion, which is so necessary if whole protein food is to be absorbed, and is occasionally impaired, for example, by pancreatic achylia and nutritional œdema of the gastro-intestinal mucosa.

School of Medicine,
Washington University, St. Louis. ROBERT ELMAN.

OXFORD VAPORISER

SIR,—I fear the brevity of my report * has persuaded Wing-Commander Soper to misread between the lines in some places. The cases dealt with were of a particular class—namely, prolonged and often repeated operations on men who had sustained recent severe wounds. I do not consider ether the *ideal* anæsthetic for these cases, although at the time it was the best available. Nitrous oxide and oxygen in a closed circuit, with cyclopropane or ether as adjuvants, would have been preferable. I tried to point out how the use of the Oxford Vaporiser minimised the disadvantages of ether, rendering them insufficient to outweigh the advantages of portability. Soper suggests premedication two hours before operation; I have found one hour most likely to bring about amnesia. Moreover a dry mouth for two hours in a hot climate is very uncomfortable, and shortage of nursing made two injections impracticable. "Unpleasant" is a relative term and I wonder if Soper's grateful patients would not have been even more grateful for an induction with 'Pentothal.' When I used a chloroform-ether mixture during induction the average amount of chloroform used was two drachms, administered on an open mask held an inch or two from the face. The small quantity of chloroform thus absorbed was sufficient to tide over the difficult transition. During the very busy period covered by my report (we might be operating 18–20 hours a day) time was of major importance, and on the occasions when I decided not to use chloroform a little CO_2 helped to speed up the induction. As to oxygen, the two best prophylactics against the toxic effects of prolonged ether (or chloroform) are, in my experience, glucose and excess oxygen.

At the end of my report I compared the Oxford vaporiser with the "tin can" vaporiser, because several anæsthetists in the Middle East had suggested that the latter was just as good. I have used the tin can when running more than one table with only one machine, and I have found that if the tube connecting the can to the patient is narrow there is too much obstruction to breathing; if, on the other hand, the tube is wide there is a dead space with accumulation of CO_2 and heavy breathing which may exhaust the patient.

M. RUSHTON.

* Captain M. Rushton's article in our issue of Oct. 23 (p. 509) was incorrectly ascribed to Mr. MARTIN A. RUSHTON, B CHIR, LDS, attached to the plastic and jaw centre at Park Prewett Hospital, Basingstoke. A correction of this regretted slip appeared on p. 572 of our issue of Nov. 6 and we take the opportunity of repeating it here.—ED. L.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS MP

THE House has adjourned for the Christmas recess in a state of expectation. Expectation of the opening of the second front as a result of the Moscow and Teheran conferences, expectation of great legislative prospects on our reassembly, expectation of political repercussions, vague and indefinite it is true, which may come upon us during the next series of sittings.

The news of the Prime Minister's illness at this juncture is disturbing and all medical members were cross-examined on the precise nature of the pneumonia of the left lung. The House wishes Mr. Churchill very well, and hopes his robust constitution and remarkable vitality will enable him to overcome this attack rapidly and completely. But the House also hopes that the Prime Minister will take a reasonable length of convalescence before returning to full work.

Mr. Eden's statement on the war situation revealed no new facts because all that can be said of general strategy has already been said in the communiques of Moscow, Teheran and Cairo. The Teheran conference settled times, places and dispositions of military efforts by land, sea and air, and these will be communicated to the enemy in due course—on the field. The full glare of the war searchlight has been turned on the Far Eastern field of operations, and the greater concentration on China, now a major factor in strategical dispositions, involves a further drain on the world's medical resources. But China may overcome her deficiency in numbers of medical personnel by instructing her educated and highly adaptable people along the lines of medical training found effective in the British and Dominion forces during the war. China has vast armies and they must be served.

When the House reassembles in the New Year one of its first duties will be a two-day debate on the Education Bill, the text of which has just been published. It is a long document running to 97 pages, with 111 clauses and 9 schedules. Provision for the examination of pupils requiring (or likely to require) special educational treatment will show the education authorities in all areas the extent of their liabilities more fully than at present. The facilities for medical treatment of school-children will need to be extended as it becomes the duty of every

authority to make "such arrangements for securing the provision of free medical treatment" as are necessary. The arrangements for the provision of "milk, meals and other refreshment" are not so definite, as they await the result of the discussions on the Beveridge proposals for children's allowances. In announcing interim decisions on the Beveridge report earlier in the year, the Government stated that they did not accept Sir William's figure of children's allowance because they proposed to supply milk and meals in school in place of part of the amount suggested. Clause 47 in the new bill, which deals with milk and meals, does not make this point clear and is certain to arouse controversy. It has been an article of faith with many educationists for a long time that one satisfactory meal should be provided for every child in every kind of school. Great as are the changes to be brought about by the bill they will leave the main structure of education still divided between the private schools and those paid for out of public moneys. The school-leaving age is to be raised to 15 in 1945—unless it is postponed—and the date for raising the leaving age to 16 is brought nearer than it was. All schools whether privately owned or otherwise will in future, almost certainly, be subject to inspection, and it would be an advantage to extend arrangements for periodic medical inspection and routine clinic to all schools, for in this respect private schools (including some of the celebrated "public schools") are at a disadvantage compared with the council schools.

On one of the last sittings Sir Frederick Sykes, who is chairman of the Miners Welfare Commission, gave an encouraging account of their activities. Many pit-head baths have been completed and 419,146 men (57% of the total) are now served. Canteens have helped, but the nutrition of miners will not be maintained at an adequate level unless, in some areas at least, the men get extra rations. Sir Frederick is soon to open a new rehabilitation centre at Talygarn for the South Wales, Forest of Dean, Somerset and Bristol areas, and he told the House that two centres are already in operation and five in preparation. The difficulty is to get medical officers and staff.

Infectious Disease in England and Wales

WEEK ENDED DEC. 11

Notifications.—The following cases of infectious disease were notified during the week; smallpox, 0; scarlet fever, 2564; whooping-cough, 1641; diphtheria, 634; paratyphoid, 2; typhoid, 5; measles (excluding rubella), 444; pneumonia (primary or influenzal), 2956 (last week 2301); puerperal pyrexia, 162; cerebrospinal fever, 77; poliomyelitis, 11; polio-encephalitis, 0; encephalitis lethargica, 1; dysentery, 166; ophthalmia neonatorum, 66. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Dec. 8 was 1925. During the previous week the following cases were admitted: scarlet fever, 142; diphtheria, 30; measles, 18; whooping-cough, 52.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 1 (0) from measles, 11 (2) from whooping-cough, 11 (2) from diphtheria, 44 (7) from diarrhœa and enteritis under two years, and 1148 (128) from influenza. The figures in parentheses are those for London itself.

Manchester reported 3 deaths from whooping-cough. There were 10 fatal cases of diarrhœa at Birmingham.

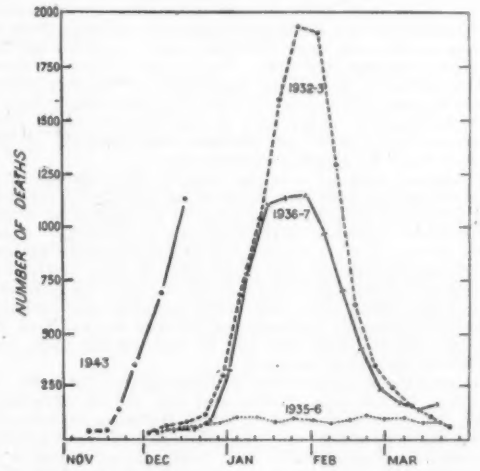
The number of stillbirths notified during the week was 199 (corresponding to a rate of 33 per thousand total births), including 23 in London.

Messrs. CIBA Ltd. have published a new edition of their handbook No. 2 in two parts, now called the *Nupercaine Handbook*. Part 1 gives full details of the use of 'Nupercaine' for spinal anæsthesia, including the technical errors which may lead to failure, and the reasons for postanæsthetic complications. Part 2 deals with surface, infiltration and regional anæsthesia and gives tables of dosage and some account of the chemistry, physics, pharmacology and toxicology of nupercaine. Copies will be sent to doctors on request.

Public Health

THE INFLUENZA EPIDEMIC

AFTER another week the epidemic retains its character of a widespread nuisance. The Ministry of Health has quoted some figures from abroad: 90,000 cases at Washington, 32,000 at Milan, half a million in Berlin. Some indication of its extent in this country has been given by official statements that one railwayman in ten has been off duty and that the call-up of pharmacists and dispensers has been postponed. Life has been very hard, especially in isolated homes, and the local colour in many hospitals and institutions has been sombre. But no alarm has been felt, and it may not be improper to apply to the nation in its transient illness the noble words of the *New York Times* last week about the Prime Minister: "We do not get the picture of a sick man, but of a man stoutly contending with an adversary." The week's toll of deaths has risen to 1148,



only 7 short of the 1936–37 peak; but the multiplier on the previous week has fallen to × 1·6, and the mortality has remained chiefly in the later decades of life, the London figures of age incidence being 1-0-1-0-1-2-4-9-22-41-47. Another week should see us near the peak, without approaching the level of 1932–33 (and remote indeed from the 7557 deaths for the week ended Nov. 9, 1918). That the drop will be as rapid as it was in 1933 is less certain, with the winter for the most part still before us. Judging by the R.G.'s return, the let-up in the Northern area continues, some further rise in London and the Home Counties is to be expected, and for the Midlands we may hope that the story of Birmingham, which follows, is nearly completed. We should of course not forget that by the time someone has succumbed to an attack his (say) 4000 more fortunate contemporaries are mostly back at work. Deaths, as the Ministry puts it, fall more slowly than cases; and as influenza is not notifiable we can only guess at cases.

Weekly Deaths from Influenza in the Great Towns of England and Wales

Week ended	AGGR.	Lond.	Grtr Lond.	NORTH	MIDL.	Manc.	B'fd	B'hm	B'tol
Nov. 13	46	6	16	19	12	4	2	2	4
20	106	10	16	56	24	4	7	1	9
27	375	29	71	172	81	44	17	20	18
Dec. 4	709	72	181	288	157	47	11	57	16
11	1148	128	349	449	248	62	28	73	22

Local Colour: Birmingham

THE Medical Research Council, through its Industrial Health Research Board, will shortly be issuing a sickness-recording system for the use of industry as a whole. Unfortunately this will not be ready for use at the beginning of the new year. When it is generally adopted we shall, for the first time, have morbidity figures for the working population. Mortality-rates have so far been the only index of health. Epidemics emphasise the need for accurate and integrated sickness records. Thus some 6500 factories, shops and offices contribute to the Hospitals Contributory Association in Birmingham, and a questionnaire would have to be sent to each of these, and replied to, before the extent of the present influenza epidemic among the workpeople there could be judged.

An industrial medical officer who spends his whole time going about factories in the city thinks that so far influenza has only slightly interfered with production, and then mainly in the smaller firms where key men are off work. In his view the public, especially those who do not remember 1918, do not yet realise the potential significance of an influenza epidemic, though factory managements are now showing some concern at the possible stoppage of work. He has seen clear evidence of the influence of working conditions on absence rates; where factory hygiene is good and overcrowding minimal there is less risk of spread; in one factory where both personnel and plant are overcrowded 20–25% of the workers have been down with the flu.

Taking an average over the year, the sick-absence rates in Birmingham factories stand at around 2–4% for men and 5–6% for women. The rates at present show about a threefold increase, with absences of 12–15%. Some firms keep a weekly analysis of sickness-benefit claims, which shows the number of people off duty with each ailment, but not the time lost. In one such works, employing 5000 men and 5000 women, the sickness claims listed under influenza for the four weeks, Nov. 20, 27, Dec. 4, 11, were 22, 55, 72 and 49 for men, and 17, 53, 61 and 35 for women.

Among the remedies used in Birmingham factories are gargling, spraying of rooms, and the use of ultraviolet light, but very few seem to know anything of aerosols, oiling of floors and so on. The Ministry of Health mask, recommended so strongly two years ago, has not been taken up, mostly because workpeople hate to think they look foolish. The industrial medical officer already quoted maintains that the most important preventive measure as far as industry is concerned is the diminution of fatigue by reducing hours of work. The workman is naturally averse to reducing his hours and therefore his wages, and as a result men in the heavy industries in Birmingham are still working 65–80 hours a week. The maximum hours for women, 54 per week, are often being worked, in addition to home duties.

HOSPITAL EXPERIENCE

An EMS hospital admitting Service and civilian sick from the Birmingham area, as well as patients from the wards of the city hospitals, noted a sharp rise in admissions of acute respiratory infections beginning on Nov. 17. The influenzal cases admitted were mostly mild, the predominating symptoms being headache, backache, general aching of the limbs, coryza, often with long paroxysms of sneezing, moderate sore throat and slight cough. Temperatures from 100° to 103° F. The patients were flushed, with conjunctival injection, coated tongue, and injected pharynx. The lungs were either clear or exhibited a few scattered rhonchi. Symptoms and fever usually lasted 24–36 hours, and rarely more than 48 hours after taking to bed. The patients were allowed up when their temperature had been normal for 48 hours, and were mostly fit for discharge 10 days after admission. This hospital admitted 23 cases of bronchopneumonia and 1 of lobar pneumonia during November. All except one of these responded well to sulphamezathine; the one exception being probably a case of atypical pneumonia in which the temperature fell by lysis during the 6th to 8th day after admission. The only complication encountered was a pleural effusion in a woman of 22. Most of this hospital's cases were in young adults; there were no deaths.

Nurses have been badly hit by the epidemic. Up to the second week of December the numbers affected in Birmingham hospitals were roughly as follows:

Hospital	*Nurses*	*Affected*
General	206	50
Dudley Road	426	57
Queen Elizabeth	456	50
Selly Oak Hospital	250	45
Selly Oak Infirmary	380	63
Children's	110	10

These figures probably include some common colds. Among the 50 nurses affected at the Queen Elizabeth Hospital, rigors were recorded in 26 cases, pyrexia over 100° F. in 57, headache in 47, backache in 37, and cough in 37; the average duration of fever was 2–3 days, and the average stay in bed 4·7 days. Sinusitis developed in 2 of the nurses, and conjunctivitis, bronchiolitis, otitis media and tonsillitis each in 1. Pulse-rates often fell sharply before the fall of temperature, and 18 cases showed a bradycardia of 60 or below per minute.

The school medical officer reports that for November the attendances at the elementary schools were only 4% below the average. This confirms the experience at the Children's Hospital, where out of 54 admissions to the medical side in the three weeks up to Dec. 11 only 10 were labelled upper respiratory infection, compared with 9 out of 52 admissions for the same period of 1942. About half of the 10 admissions were probably for complications of influenza, though without a family history this would not have been detected. On the other hand, about half of the children in the hospital's day nurseries are said to be affected, and about a third of the nursery staff. At the Ear and Throat Hospital the number of children requiring paracentesis has doubled, compared with normal times; these cases have cleared up in outpatients without complications. There has also been a definite increase in acute suppurative otitis media in adults.

At the General Hospital, among 19 cases of influenzal pneumonia seen by one physician there have been 3 deaths. The women with pneumonia all told the same story—battling with a cold for some days to keep the home going, and a sudden chill while standing in a shopping queue. Two of the fatal cases—a young man and a middle-aged woman—showed heliotrope cyanosis; the third was in a woman near term with her fourth child. The pneumonia in these 19 cases was unaffected by sulphonamides; physical signs were slight but X-ray shadowing sometimes surprisingly dense. The onset was sudden, temperature often 104° F., headache severe, pleurisy rare, cough slight if no previous bronchitis, sputum scanty and only occasionally bloodstained. Defervescence was gradual.

At Selly Oak Infirmary, of 19 patients who died of influenza during November and the first week of December, there was one aged 11 weeks and others aged 2, 24, 28, 34 and 44 years; the rest were people well over 50, with previous lung damage, such as chronic bronchitis, fibrosis of lung or bronchiectasis, or with such conditions as diabetes. Autopsies showed the typical angry redness of the trachea and main bronchi, and hæmorrhagic areas scattered over the lung fields. The heart muscle looked unhealthy in every case.

SHIP-BORNE SMALLPOX

A SHIP from North Africa arrived in a West Scottish port on Nov. 24 with a case of confluent smallpox on board, a soldier, aged 23. He had sickened on Nov. 15 and had been admitted to the ship's hospital next day, and was diagnosed smallpox on Nov. 19, thereafter being isolated in one of the cabins adjacent to the hospital. This cabin was entered from an alleyway, with access to it through the ship's hospital. The patient had been vaccinated, unsuccessfully, on Aug. 5, 1942, this being his first vaccination.

The ship had a crew of about 200 along with 148 other personnel, and carried a full complement of passengers—3500, including about 400 marine survivors comprising Dutch, Javanese and British, along with others. When the case occurred there was only sufficient lymph on board to vaccinate about 100 of the immediate contacts. On its arrival, the ship was detained at the

anchorage, and arrangements made to inspect and vaccinate everyone on board. This procedure was completed on Nov. 24, the date of arrival of the ship. It was obvious, however, that vaccination at that stage would confer insufficient protection on any susceptible persons who might have been exposed to infection during the earlier period of the patient's illness. The ship was full to capacity.

These factors largely determined the subsequent measures that were taken, with the full consent and coöperation of the regional port director and other authorities concerned, the aim being to secure adequate surveillance for a period of 14 days after the removal of the patient from the ship to the smallpox hospital ashore. With this end in view, the following measures were adopted.

1. The ship was detained at its anchorage and not permitted to proceed to its original destination.

2. The passengers were disembarked on Nov. 26 after reinspection, appropriate instructions for surveillance, to end on Dec. 8, being issued by the authorities. A few who were on a different deck and unlikely to have come into contact with the patient were allowed home. Their addresses and the location of the station to which the passengers went were notified to the health authorities of the districts.

3. All others were kept on board, including (*a*) a group of 39 men whose previous vaccinations were judged to be unsatisfactory by the inspecting medical officers, (*b*) the 42 inmates of the ship's hospital, (*c*) the marine survivors, and (*d*) the ship's crew.

4. Finally, on Nov. 27 and 29, those in group (*b*) were removed to hospital ashore, while those in groups (*a*) and (*c*) were transferred to a station in the country, where they were detained under observation until Dec. 8—i.e., fourteen days after the case of smallpox was removed from the ship. The reason for clearing the ship of all except the crew was to enable the vessel to go to sea; none of the crew was allowed ashore before the ship sailed.

These precautions amounted to a frank imposition of quarantine. The salient facts ascertained when the ship arrived were that the patient was in his ninth day of illness, in the confluent stage of smallpox; vaccination of passengers and crew when the case was diagnosed on the ship had been possible only to a limited extent owing to lack of lymph; and the case had occurred under conditions of close contact which obtain on a crowded ship. Further, the general revaccination carried out when the ship arrived could not be regarded as an adequate precaution; consequently, the problem resolved itself into one of surveillance under circumstances which would allow of proper daily medical supervision, a view which was accepted and acted on by the authorities responsible for the movements of the ship and of the personnel on board.

These were the main reasons for the steps taken in this case, but the decision to adopt them rested also on previous experience last year. On May 29, 1942, a ship arrived in the Clyde, when a member of the crew was found to be suffering from confluent smallpox, diagnosed as measles, the rash appearing on or about May 24. As subsequent events revealed, the infection had already spread among the crew and to the passengers, both directly and indirectly, while general vaccination of those on board did not in fact prevent the outbreak which subsequently took place. During the course of this outbreak, instances occurred where contacts contracted smallpox, although successfully vaccinated during the early days of the incubation period of the disease.

Thus, the situation on the two ships was similar in that each had on arrival at the port a confluent case of smallpox on board, the patient being approximately at the same stage of the illness—the ninth day. In neither case had general vaccination been carried out on board until port was reached, because on the former ship the real nature of the illness was not recognised and on the present ship there was insufficient lymph. On the other hand, the isolation of the patient in the present case was much better, but the risk from crowding was greater.

As regards the subsequent story, none of those who were isolated ashore or in hospital has since contracted smallpox. It is not possible to give an accurate account of the previous vaccinal history of all on board. As explained, the vaccination state of certain passengers, 39 in all, was judged to be unsatisfactory by the medical officers conducting the inspections and they were taken to the special station ashore, along with the marine survivors and the others. Observations made at the station showed that a good response to vaccination was obtained as regards (*a*) 21 out of the above 39 with unsatisfactory previous records; (*b*) in 9 out of 38 others, and (*c*) in 13 out of the 121 Dutch survivors, apart from a considerable number in these groups in whom there was a modified reaction. These results indicate a degree of susceptibility among the contacts.

There is no precedent in recent times for the policy of quarantine adopted. The steps to be taken on the arrival of a ship at a port are embodied in the Port Sanitary Regulations, 1933, as agreed at the International Sanitary Convention of Paris in 1926, under which those on board are vaccinated and allowed to proceed to their shore destinations, surveillance there being the duty of the local health authority. This has been the invariable practice hitherto at all ports in this country. But the regulations themselves as drafted can be interpreted as giving wider discretionary powers to the port health authority. This incident again raises the question of protection by vaccination of those who travel from infected countries to home ports.

Obituary

HUMPHREY BARRON THOMSON

M B BELF; CAPTAIN RAMC

Captain Humphrey Thomson, who had been reported missing, is now officially recorded as killed in action during December, 1941. From the meagre accounts which have filtered through from the Far East it appears that the battalion of the regiment, to which he had been posted, was holding part of the border between Malaya and Thailand. The regimental aid-post established somewhere near Alor Star was attacked and wiped out by the Japanese in the early days of their invasion. The sergeant of the unit escaped and reported that Captain Thomson was killed in this assault.

Henri, Belfast

The only son of Prof. W. W. D. Thomson, FRCP, of Belfast, Humphrey Barron Thomson was born in 1916 and educated at Elm Park and Campbell College, Belfast. He qualified from Queen's University in 1939, and after six months in the Royal Victoria Hospital as house-physician to Dr. Boyd Campbell and as house-surgeon to Mr. Howard Stevenson, he joined the RAMC. Shortly afterwards he volunteered for service in the Far East and before he left he married Miss Mary Glendinning, of Island Reagh, Comber, co. Down. On arrival in Malaya he acted as medical officer in the military hospital at Singapore till he was posted as a regimental medical officer.

Humphrey Thomson was full of the joy of life. His wit and humour, his high ideals, and his outspoken championship of what he considered right won the regard and affection of his contemporaries, while his kindness of heart and old-world courtesy endeared him to the older generation. He would have been the last to claim any brilliance of scholarship or profound book knowledge but in the medical profession he found an ideal niche for his capabilities and shrewd common sense. His success was also due to the absorbing interest he took in his patients whom he regarded as men and women rather than as cases, for subconsciously he obeyed the Hippocratic maxim—To a love of his profession the physician should add a love of humanity.

DR. BURTON WOOD

N. L. R. writes: It was my good fortune in recent years to be closely associated with Dr. Burton Wood in his work at the London Chest Hospital. His loss to the hospital and to his colleagues is very great. He gave

generously of his knowledge and experience of respiratory medicine and the lessons learned from his method of approach to clinical problems are abiding. He never relied overmuch on the stethoscope, but was able to get more accurate information from a skiagram than most men, while his power of description and choice of words enabled him to impart his findings to others. He was not, however, exclusively, or even predominantly, "radiologically-minded": he was a shrewd clinician in the broadest sense, giving due weight to the history and frequently using with advantage for diagnosis and prognosis the physical characteristics and mental reactions of a patient. Fine physician and brilliant speaker though he was, it was in an armchair round the fireside that Burton Wood excelled. In this intimate atmosphere he delighted to discuss a wide range of subjects and his guest would always leave wiser than he came.

Notes and News

RED SQUILL FOR RATS

Blue squill charms the eye with its inflorescence, its white bulb comforts the bronchitic, and the red variety demolishes rats; so that man has reason to cherish and admire the little lily. Among rat poisons red squill stands high; Dr. Morgan's total war on rats, described in this column last week, commended its use, "if you can get it." Of late none has been available from Sicily or Malta. Arsenic and zinc phosphide are plentiful, and are good poisons if properly used, but some think that results could be achieved more quickly with strychnine—a painful and undesirable poison not at present permitted. Rats have been breeding fast in the dock areas, and the Pharmaceutical Society have been considering whether they should ask Mr. Herbert Morrison to release strychnine for killing them. Fortunately this should not be necessary. A cargo of red squill has arrived from North Africa and another is expected. Defestation of the dock areas and warehouses will be hastened by this well-timed argosy.

University of Cambridge

On Dec. 11 the degrees of MB, B CHIR were conferred on J. R. Handforth by proxy. At recent examinations the following were successful:

Part I: surgery, midwifery and gynæcology.—M. S. Adams, C. G. Attenborough, H. H. E. Batten, T. S. L. Beswick, P. L. Blaxter, K. A. C. Bowen, D. Brazier, D. W. Burnford, J. D. Burton, I. J. Carré, I. R. Clout, A. Comfort, R. P. Cook, P. J. Coope, P. B. S. Cooper, P. D. B. Davies, C. D. Drew, E. D. Dyson, R. D. Eagland, D. A. W. Edwards, F. H. Epstein, D. M. Evans, M. Farquharson, J. J. Fleminger, M. A. Floyer, P. H. Friedlander, J. W. Fullerton, S. A. M. Garibian, H. M. Giles, M. T. Gillies, M. L. Graeme, C. R. H. Green, J. A. Harrington, C. E. Hartley, G. Hartridge, F. N. Hicks, I. S. Hodgson-Jones, C. B. Holmes, N. S. Hooton, R. C. A. Hunter, G. I. C. Ingram, R. E. Irvine, D. G. James, M. C. Joseph, E. M. Kingsley-Pillers, A. G. Leatham, J. Lorber, P. F. Lucas, D. W. R. Lyle, M. B. McIlroy, I. L. McKelvie, R. M. MacPhail, I. A. Magnus, S. M. Martin, M. B. Matthews, P. D. Mort, M. W. L. Mutch, K. N. V. Palmer, T. J. S. Patterson, J. C. R. Payne, P. B. Philip-Smith, K. L. Prendergast, P. D. G. Pugh, K. E. E. Read, M. K. E. Reaney, T. J. Rendle-Short, J. Roche, L. J. Rowley, R. C. Roxburgh, F. A. R. St. John, B. Schofield, F. D. Schofield, H. F. Sebag-Montefiore, J. A. Shiers, J. F. N. Sidebotham, K. W. Symons, M. Symons, W. E. W. Tilleke, J. H. M. Tilley, M. M. Tunstall-Behrens, R. G. Turner, J. Upsdell, D. R. D. Vanstone, D. G. Veater, N. T. Welford, D. P. Wheatley, B. J. Whitfield, A. P. Wingate, R. A. Womersley, K. A. A. Wray, G. S. Yeoh.

The board of research studies has approved Dr. Dorothy Russell for the title of the degree of D Sc.

Medical Awards

The following awards have been made in recognition of gallant and distinguished services in Burma and on the eastern frontier of India.

CBE.—Colonel Bijitendra Basu, OBE, IMS.

OBE.—Lieut.-Colonel C. F. J. Cropper, BA OXFD, MRCPE, IAMC; Colonel Charu Chandra Kapila, MRCP, IAMC; Colonel J. A. Mathison, MB, RAMC; Colonel Manfred Morris, MD MANC., RAMC; Lieut.-Colonel Victor Perez, MD LOND., RAMC.

MBE.—Major G. D. W. Adamson, LRCPE, RAMC, Asst. Surgeon (British cadre) A. V. Barker, DMD; Captain J. B. Hurll, MB GLASG., RAMC; Major J. S. Kerss, MB EDIN., RAMC; Captain J. G. Scott, MB DURH., RAMC; Subadar V. D. Sharma, IAMC; Major J. F. Shepherd, FRCS, IAMC; Subadar C. Singh, IAMC; Major L. S. F. Woodhead, MRCS, IAMC.

DSO.—Lieut.-Colonel G. R. Marshall, MRCS, RAMC.

MC.—Captain N. P. Mahapatra, MB., IAMC.

By permission of the Privy Council the name of the Chartered Society of Massage and Medical Gymnastics has now been changed to The Chartered Society of Physiotherapy.

University of Manchester

At recent examinations the following were successful:

O. E. Adeniyi-Jones, J. R. Archibald, Margaret A. Barber, Kathleen M. Brown, Alice I. Burke, Margaret A. Burke, J. L. Clarkson, Hyman Davies, I. L. Gregory, E. J. Guest, Jack Hinchliffe, C. L. Holden, Edmund Isherwood, G. W. H. James, F. W. Johnson, Friedrich Kratter, R. McK. Laslett, Alan. Marsland, T. M. Martin, Thomas Moss, J. F. O'Grady, Arthur Ramsden, F. C. Reidy, M. M. Rose, James Sharp (with distinction in surgery and medicine), and Elizabeth Travers.

King Edward's Hospital Fund for London

The Duke of Gloucester speaking from the chair at a meeting of the Fund on Dec. 14 announced that £280,000 was again being distributed among the voluntary hospitals. A special grant of £5000 had been made to St. Thomas's to help with expenses at its country branch at Godalming which were indirectly due to the war damage to the main hospital, and £4000 to Charing Cross as a first instalment towards its rebuilding on a site which has yet to be determined. This year £5000 had once more been set aside to encourage the establishment of group preliminary training schools for nurses. Not long ago only 20 of the 85 training hospitals in the fund's area had schools; soon there would be scarcely a dozen without one. Referring to the fund's report on hospital diet the Duke announced that several hospitals had already sought their advice and he was therefore appointing a committee with Prof. J. C. Drummond, D SC., scientific adviser to the Ministry of Food, as chairman. Sir Wilson Jameson would also be a member and Miss Margaret Broatch had been appointed dietetic adviser.

Appointments

MILLS, HERMIA, MB LOND.: MO at Holloway Prison.

READ, J. C., MRCS, LDS: medical registrar at the Royal Dental Hospital, London.

SOUTHWELL, NEVILLE, MB CAMB, MRCP: medical tutor and acting medical registrar at Guy's Hospital, London.

Births, Marriages and Deaths

BIRTHS

BICKFORD.—On Dec. 15, at Bolney, Sussex, the wife of Squadron-Leader B. J. Bickford, FRCS—a son.

JOHNSON.—On Dec. 15, in London, the wife of Lieut.-Colonel A. G. Johnson, RAMC—a daughter.

MOLE.—On Dec. 6, at Crediton, the wife of Captain R. H. B. Mole, RAMC—a daughter.

NEILL.—On Dec. 7, at Oxford, to Dr. Joyce Neill (formerly Gibbon Davies) wife of Mr. Desmond Neill—a daughter.

NICHOLL.—On Dec. 4, at Lewes, the wife of Surgeon Lieutenant Geoffrey Nicholl, RNVR—a son.

RAINEY.—On Dec. 15, at Harleston, Norfolk, the wife of Surgeon Lieutenant R. E. Rainey, RNVR—twin daughters.

RATCLIFFE.—On Dec. 14, at Derby, the wife of Mr. James R. Ratcliffe, FRCS—a daughter.

STEVENS.—On Dec. 7, in London, the wife of Major C. P. Stevens, RAMC—a daughter.

SYMONS.—On Dec. 13, at Moretonhampstead, the wife of Major H. M. SYMONS, RAMC, of Ballarat, Australia—a son.

MARRIAGES

HERFORD—CRAGO.—On Dec. 15, at Clifton, Bristol, Martin Herford, MBE, MC, MB, major RAMC, to Mary Crago, MB.

MCBRYDE—DAVY.—On Dec. 18, at Hale, J. R. McBryde, captain The Border Regiment, to Elisabeth Joan Davy, lieutenant RAMC.

OSTROWSKI—WIGHTMAN.—On Dec. 16, in Edinburgh, Tadeusz Maria Ostrowski, MB. CH B, 2nd lieutenant Polish Parachute Unit, to Helen Mary Wightman.

PICKERING PICK—NETTELFIELD.—On Dec. 11, at Pyrford, Michael Pickering Pick, MRCS, surgeon lieutenant RNVR, to Anne Nettelfield.

DEATHS

DUFFIELD.—On Dec. 17, at Bournemouth, Ernest Alphonse Duffield MRCS.

JOLY.—On Dec. 14, in London, John Swift Joly, MD DUBL., FRCS, aged 66.

TROUTON.—On Dec. 16, at Rotherfield, Sussex, Gardiner William Trouton, TD, MD DUBL., aged 85.

WILLIAMS.—On Dec. 15, John Robert Williams, MB EDIN., of Penmaenmawr, aged 81.

WILLIAMS.—On Dec. 14, at Midhurst, Sussex, Reginald Muzio Williams, MD LOND., JP, aged 83.

WILSON.—On Dec. 12, Roger Parker Wilson, CIE, FRCS, DPH, lieut.-colonel IMS. retd.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Vitamin Therapy and the Influenza Epidemic

AVOIDING COMPLICATIONS AND SEQUELAE

Febrile illnesses call for reduction in diet. The amounts of light foods which can be tolerated supply a lower calorific intake than is needed. Deficiency in the vitamins is even more important. Requirements increase with the heightened metabolic rate and several of the vitamins cannot be stored.

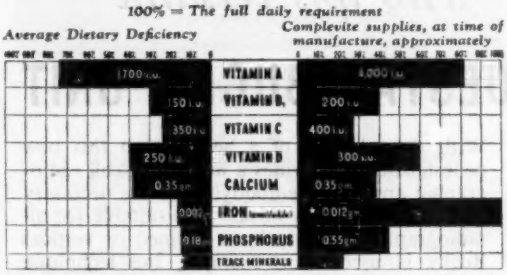
Many adolescents and adults bear in their teeth the permanent record of vitamin shortage during past febrile illnesses (*Brit. Dent. J.*, 1940, LXIX, 209). Vitamins A and D, calcium and phosphorus should be supplied daily to all febrile patients. Vitamins B and C are equally necessary.

A multiple vitamin and mineral supplement (Complevite) is an essential addition to restricted diets. It should be begun immediately the restriction begins and continued throughout the course of the illness and in convalescence.

Supplying the full physiological requirements in this way offers the greatest likelihood of shortening the illness and may be the only way of preventing permanent changes in the teeth, such as hypoplasia, with subsequent caries.

COMPLEVITE

A multiple vitamin and mineral supplement



**The iron in Complevite exceeds the calculated deficiency expressly to combat the nutritional anaemia so common in children and in women of child-bearing age.*

POST-INFLUENZAL DEBILITY

Clinical observation reveals a clear relationship between certain forms of cardiovascular dysfunction and hypovitaminosis B_1. Unless the patient's intake of vitamins and minerals has been well maintained during the infection, as suggested in the adjoining column, the influence of deficiencies due to restricted diet may be reflected in his post-influenzal condition. In combating the debility of heart and digestive organs so frequently experienced after influenza, the value of a high vitamin B content in the diet cannot be too strongly stressed.

All too often the patient will resume his normal daily round under the impression that he is quite well again. By so doing he may put a severe strain upon his weakened resistance.

BEMAX IN CONVALESCENCE

In Bemax the physician has a natural product which can be prescribed without the patient feeling that he is being treated as a convalescent. At the same time, it supplies him with more of the complete vitamin B complex than can be obtained from any other natural source. The high vitamin B_1 content has also been shown to have a marked effect in anorexia.

IN GASTRIC CONDITIONS

Bemax is pleasant to take, easy to digest and assimilate. In general, it is readily accepted even in those cases where gastric symptoms predominate. In this connection, the physician will appreciate the high protein content of first-class biological value—no less than 34 per cent. When its assimilable iron and mineral salts are also taken into account it will be seen that Bemax has much to recommend it in all cases of post-influenzal debility.

BEMAX Stabilised wheat embryo

Rich in the B complex; Vitamin E; Iron and Phosphorus

Further particulars concerning Complevite or Bemax gladly sent on request. Vitamins Ltd. (Dept.L.X.A.), 23, Upper Mall, London, W.6.

DISCLOSURE OF VITAMIN CONTENT

It is only natural that Vitamins Ltd. should offer a warm welcome to the recent regulations of the Ministry of Food, under which it is intended that foods claimed to contain vitamins and minerals must in future bear on the label a quantitative disclosure of these active ingredients. For many years now the vitamin content of Bemax has been clearly shown in quantitative detail both in the medical and lay press and on each package.

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ANTIPEOL CUTANEOUS VACCINE OINTMENT

contains sterile vaccine filtrates (antivirus) of all the common strains of **STAPHYLOCOCCI, STREPTOCOCCI** and **B. PYOCYANEUS**, in a lanoline-zinc-ichthyol base.

INDICATIONS: Abscesses, boils, burns, eczema, ulcers, hæmorrhoids, impetigo, sycosis, wounds, and all inflammatory cutaneous infections. **ANTIPEOL LIQUID** for infections of the ear, septic cavities and suppurating wounds.

OPHTHALMO-ANTIPEOL

contains, in a semi-fluid base, the sterile vaccine filtrates of **STAPHYLOCOCCI, STREPTOCOCCI, B. PYOCYANEUS, PNEUMOCOCCI FRAENKEL** and **GONOCOCCI.**

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a nasal immunising cream, contains Antipeol Liquid and the antivirus of **PNEUMOCOCCI, PNEUMO-BACILLI, ENTEROCOCCI, M. CATARRHALIS, B. PFEIFFER,** and calmative and decongestive ingredients.

INDICATIONS: Coryza, rhinitis, hay fever, catarrh, influenza, common cold and other naso-pharyngeal infections.

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Polyvalent bacteriophages specific against 144 strains of micro-organisms common to infections of the gastro-intestinal tract, kidneys and bladder. **RAPIDLY EFFECTIVE RESULTS** in enteritis, dysentery, colitis, diarrhœas, B. coli infections, typhoid and paratyphoid fevers and other intestinal and para-intestinal infection.

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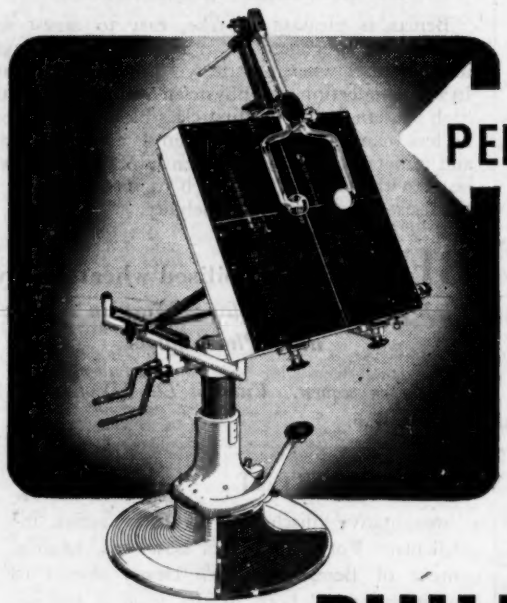

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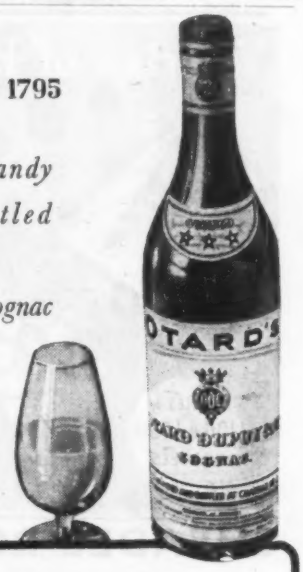

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For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

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SENIOR HOUSE PHYSICIAN (B2), vacant 1st February, 1944. The salary is at the rate of £150 p.a., with full residential emoluments. R and W practitioners who now hold A posts may also apply, when appointment will be limited to 6 months.

CASUALTY OFFICER (A), vacant 16th February, 1944. Salary at the rate of £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months. J. C. BURDETT,

16th November, 1943. Director and House Governor.

MILLER GENERAL HOSPITAL, Greenwich High Road, S.E.10. Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE PHYSICIAN (B2). Duties to commence as soon as possible. Salary at the rate of £120 p.a., plus share of Ministry of Health allowance, with full residential emoluments. R practitioners holding A posts may apply, when appointment will be limited to 6 months.

Applications, giving full details of age, experience, etc., together with 3 recent testimonials, to be sent to the undersigned as soon as possible.

3rd December, 1943. L. G. BAIN, Assistant Secretary.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male, for the resident appointment of FRACTURE OFFICER (B1) for Out-patient Fracture Clinic. Preference will be given to candidates who have had previous experience in dealing with fractures. Salary at the rate of £250 p.a., with the usual residential emoluments. Duties to commence as soon as possible. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving full particulars, together with copies of 3 recent testimonials, to be sent as soon as possible to—

11th December, 1943. L. G. BAIN, Assistant Secretary.

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Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 2 recent testimonials should be sent immediately to—

R. A. MICKELWRIGHT, House Governor.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. A vacancy occurs for a CLINICAL ASSISTANT in the Ear, Nose, and Throat Department.

Applications should be addressed to the Secretary.

MIDDLESEX COUNTY COUNCIL. Resident Junior Assistant MEDICAL OFFICER (ANÆSTHETIST) (B2) required at Redhill County Hospital, Edgware, Middlesex. Applications invited from registered medical practitioners, including R and W practitioners now holding A posts. Salary £250 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties, such as Council may direct, under supervision of Medical Director. Appointment, subject to medical examination and 1 month's notice, is for 6 months with possibility of extension to 12 months (except in case of R and W practitioners). Post now vacant.

Applications, stating age, nationality, qualifications, present post, and previous experience, and enclosing copies of not more than 3 recent testimonials, to the Medical Director, "B3," of Hospital. Application forms not provided. Closing date 1st January, 1944.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex, Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Resident Casualty Officer (B1) required at Redhill County Hospital, Edgware, Middlesex. Applications invited from registered medical practitioners who have held house appointments and had good all-round experience (including R and W practitioners holding B2 posts). R practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £350 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties under Medical Director will include dealing with casualties and admissions to hospital and such other duties as may be required. Appointment, subject to medical examination and 1 month's notice, is primarily for 6 months, with possibility of extension to 12 months. Post vacant early January, 1944.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to Medical Director, "B3," of Hospital. Application forms not provided. Closing date 1st January, 1944.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Two Casualty Officers (one B1 vacant 1st February, 1944, and one B2 vacant 5th March, 1944) (resident) required at Central Middlesex County Hospital, Park Royal, N.W.10. Applications invited from registered medical practitioners preferably who have held previous hospital appointments. (B1 post: R and W practitioners holding B2 posts eligible; R practitioners holding B1 posts ineligible unless rejected by R.A.M.C. B2 post: R and W practitioners holding A posts may apply.) Salary, £350 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties, such as Council may direct, under supervision of Medical Director. Appointments, subject to medical examination and 1 month's notice, are primarily for 6 months but may be extended for further 6 months (except in case of R and W candidates for B2 post).

Applications, stating age, nationality, qualifications, present post and previous experience, enclosing copies of not more than 3 recent testimonials, to the Medical Director, "B3," of Hospital. Application forms not provided. Closing date 8th January, 1944. C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Resident Assistant Medical OFFICER (B1) required at Redhill County Hospital, Edgware, Middlesex. Applications invited from registered medical practitioners (including R and W practitioners holding B2 posts) with considerable obstetric experience. R practitioners now holding B1 posts ineligible unless rejected by R.A.M.C. Salary £400 by £25 to £475 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time obstetric duties and such other duties as Council may direct under supervision of Medical Director and Obstetric Surgeons. Appointment is for 4 years only, subject to medical examination and 1 month's notice. Post vacant 1st March, 1944.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to the undersigned. Application forms not provided. Closing date 8th January, 1944.

C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Psychiatrist (part-time) required at Twickenham Child Guidance Clinic. Registered medical practitioners with special experience in child guidance. 4–6 sessions weekly at a fee of £2 12*s.* 6*d.* per session of 2½ hours.

Applications, stating age, nationality, qualifications, and experience, with names of 2 persons for reference, to the undersigned by 14th January, 1944. Applicants should not be liable for National service.

C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

ROYAL WATERLOO HOSPITAL FOR CHILDREN & WOMEN, WATERLOO-ROAD, S.E.1. Applications are invited from registered medical practitioners (Female) for the appointment of RESIDENT HOUSE SURGEON (A), vacant 1st January, 1944. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications, stating age, qualifications with dates, should be sent to the undersigned and accompanied by copies of 3 recent testimonials. J. H. TEASDALE, Secretary.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE PHYSICIAN (A). Salary at the rate of £150 p.a., with board, residence, and laundry. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply. The appointment will be for a period of 6 months.

Applications should be sent forthwith to—

FRANK JENNINGS, House Governor and Secretary.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL. (Non-sectarian.) (102 Beds.) Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (A) with medical work combined. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications should be sent forthwith to the General Superintendent.

HUDDERSFIELD ROYAL INFIRMARY. (331 Beds.) Applications are invited from registered medical practitioners for the following appointments:—

HOUSE SURGEON (A), to commence 24th February, 1944. Duties will include those of House Surgeon to the Abnormal Maternity Department. Salary at the rate of £187 10*s.* p.a. with full residential emoluments.

CASUALTY OFFICER (B2), to commence 1st February, 1944. Salary at the rate of £200, with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent as soon as possible to—

H. J. JOHNSON, General Superintendent and Secretary.

CITY AND COUNTY OF NEWCASTLE UPON TYNE. NEWCASTLE GENERAL HOSPITAL. (900 Beds.) HOUSE PHYSICIANS (A) and HOUSE SURGEONS (A). Applications are invited from registered medical practitioners, Male and Female, for the above appointments, shortly vacant. The appointments will be for a period of 6 months. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications to be forwarded to the Medical Officer of Health, Town Hall, Newcastle upon Tyne, 1.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the nations war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in specia branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

COUNTY BOROUGH OF CROYDON (Mayday Hospital). Applications are invited from registered medical practitioners (either sex) who have had practical hospital experience in Gynæcology and Obstetrics, and of antenatal and postnatal clinics, for the appointment of JUNIOR ASSISTANT OBSTETRICAL OFFICER (B2), now vacant. Salary £150 p.a., with board residence and laundry valued at £140, and a cost-of-living bonus of £18 4s. p.a. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months; otherwise not exceeding 1 year.

Applications, on forms to be obtained from the Medical Officer of Health, 20, Katherine-street, Croydon, by sending a stamped addressed foolscap envelope, must be returned to him not later than 11 A.M. on Monday, the 3rd January, 1944, together with copies of 3 testimonials. Canvassing will disqualify.

E. TABERNER, Town Clerk.

Town Hall, Croydon, 15th December, 1943.

LINCOLN COUNTY HOSPITAL. (Voluntary Hospital—200 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), vacant 1st January, 1944. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications to: ARTHUR MOORE, Secretary-Superintendent.

9th November, 1943.

BEDFORD COUNTY HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE SURGEON (B2), vacant immediately. Salary is at the rate of £190 p.a., with full residential emoluments. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months.

Applications to the Secretary.

ROCHDALE INFIRMARY, LANCASHIRE. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT SURGICAL OFFICER (B1). Salary at £250 p.a. Suitably qualified R and W practitioners holding B2 appointments; also R practitioners holding B1, and rejected by the R.A.M.C., may apply.

Applications immediately to the Superintendent-Secretary.

CITY OF MANCHESTER. Baguley Sanatorium. (421 Beds.) Applications are invited from registered medical Men for the appointment of TEMPORARY RESIDENT ASSISTANT MEDICAL OFFICER (B1) vacant now. Candidates should have had experience in the treatment of pulmonary tuberculosis. Salary £350 p.a., rising by annual increments of £25 to £450, with board, residence, and laundry valued at £85 in addition, subject to the Manchester Corporation conditions of service. A temporary cost-of-living wages addition is payable in addition to the salary stated. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply. The appointment will be temporary for the duration of the war.

Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, G.P.O. Box 399, Town Hall, Manchester 2, and applications for the post must be received by him not later than 10th January, 1944. Canvassing in any form is prohibited.

R. H. ADCOCK, Town Clerk.

Town Hall, Manchester, 2, 16th December, 1943.

COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. MIDDLETON-IN-WHARFEDALE SANATORIUM AND EMERGENCY HOSPITAL. (600 Beds.) Applications are invited for the post of TEMPORARY JUNIOR ASSISTANT MEDICAL OFFICER (B1) at the Middleton-in-Wharfedale Sanatorium and Emergency Hospital, near Ilkley. The successful candidate will be required to reside at the Sanatorium. Married quarters are not available. Preference will be given to candidates with experience in the treatment of pulmonary and non-pulmonary tuberculosis. Salary £350, rising by increments of £25 to £450, together with the usual residential allowances. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications should be sent to the County Medical Officer, County Hall, Wakefield, not later than the 17th January, 1944.

BERNARD KENYON, Clerk of the County Council.

County Hall, Wakefield.

CITY OF MANCHESTER. Monsall Hospital for INFECTIOUS DISEASES. (600 Beds.) Appointment of SENIOR RESIDENT ASSISTANT MEDICAL OFFICER (B1). Applications are invited from registered medical practitioners, Male or Female, for the above-mentioned appointment, vacant now. The appointment will be temporary for the duration of the war. Preference will be given to candidates who have held resident surgical and medical posts in general hospitals.

The basic cash salary scale commences at £350 p.a. and rises by annual increments of £25 to a maximum of £450, plus a temporary cost-of-living wages addition, with board, residence, and laundry in addition, subject to the Manchester Corporation conditions of service. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, P.O. Box No. 399, Town Hall, Manchester, 2, and applications for the post must be received by him not later than 10th January, 1944.

Canvassing in any form is prohibited.

R. H. ADCOCK, Town Clerk.

Town Hall, Manchester, 2, 17th December, 1943.

BRADFORD ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male, single) for the 6 months' appointments. Salary of each £150 p.a., with full residential emoluments. There are 345 Beds and 8 Resident Officers.

HOUSE PHYSICIAN (B2). R practitioners how holding A posts may apply.

HOUSE SURGEON (A). Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to: H. TRUSSON, House Governor and Secretary.

16th December, 1943.

THE KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION. Applications are invited from duly registered medical practitioners (Male or Female) for AREA ASSISTANT TUBERCULOSIS OFFICER. The appointment is temporary and open to review after the war. The scale of salary is £500 p.a., rising by annual increments of £25 to £700, plus temporary war bonus, at present £25 p.a. The Local Government Act, 1937, is applicable to the Association. Candidates should preferably have had at least 6 months' special training in tuberculosis, and also 18 months' experience in general clinical work, of which not less than 6 months should have been spent in a hospital as resident officer in charge of beds occupied by general medical or surgical cases. A knowledge of Welsh is desirable but not essential.

Applications, stating age, qualifications, experience, and full information as to liability for military service, medical fitness, together with names of 3 referees, should be received by the undersigned not later than Wednesday, 12th January, 1944.

NORMAN TATTERSALL, Principal Medical Officer.

Memorial Offices, Cathays Park, Cardiff.

DEVON COUNTY COUNCIL. By consent of the Ministry of Health, applications are invited for the post of ASSISTANT COUNTY MEDICAL OFFICER. Although the vacancy is on the permanent staff, the appointment will be temporary for the duration of the war, after which the officer appointed will, if holding the D.P.H., be eligible to apply for the permanent post. The officer will be required to live in the Tiverton area. Salary scale £500, rising by annual increments of £25 to £700, plus £25 in lieu of war bonus, the initial salary depending upon previous experience and salary, subject to the maximum of £700. Car essential, for which mileage allowance will be made. Applicants born after 5th March, 1896, must submit full information as to their liability for military service and obtain approval from the Senior Regional Medical Officer of their District before applying.

Application forms may be obtained from the County Medical Officer, 4, Barnfield-crescent, Exeter, and must be returned to him on or before Monday, 10th January, 1944.

A. J. WITHYCOMBE, Clerk of the Council.

COUNTY BOROUGH OF IPSWICH. Borough General HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of TEMPORARY RESIDENT ASSISTANT MEDICAL OFFICER (B1). Applicants should have held house appointments and had surgical experience. Salary at the rate of £350 p.a. plus full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications to the Medical Officer of Health, Public Health Department, Elm Street, Ipswich.

WEYMOUTH AND DISTRICT HOSPITAL, Weymouth, Dorset. Applications are invited from registered medical practitioners (Male or Female) for appointment of HOUSE SURGEON (A). Salary £160 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under National Service Acts may apply, when appointment will be for 6 months.

Applications, with copy testimonials, should be addressed to the Secretary-Superintendent of the Hospital as early as possible.

CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE, WITHINGTON, MANCHESTER, 20. The Board of Management invite applications for the post of GENERAL SUPERINTENDENT AND SECRETARY to the above Institution. Applicants must have had wide experience of hospital management. Salary £1000 p.a., or according to qualifications.

Applications, containing full particulars together with copies of not less than 3 testimonials, to be sent by 29th December, 1943, to: PERCY N. GLASS, General Superintendent and Secretary.

THE BURSLEM HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL, High-lane, TUNSTALL, STOKE-ON-TRENT. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A). Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications to: C. E. LOWNDES, Secretary.

NORFOLK AND NORWICH HOSPITAL, Norwich. Applications are invited from registered medical practitioners for the appointments of GENERAL HOUSE SURGEON (A) and HOUSE SURGEON (A) to the Orthopædic Department. Salary is at the rate of £170 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointments will be for a period of 6 months.

Applications to be addressed to—
FRANK INCH, House Governor and Secretary.

IPSWICH COUNTY BOROUGH COUNCIL. Borough General HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A) now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Added remuneration for special qualifications where a candidate is considered suitable for the appointment. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months; otherwise 1 year.

Applications, stating age, nationality, and qualifications, and accompanied by copies of 3 recent testimonials, to be sent as soon as possible to the Medical Officer of Health, Public Health Department, Elm-street, Ipswich.

GLASGOW ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the post of SECOND ASSISTANT (B1) to the Orthopædic Department. Salary £350 p.a., non-resident. Duties to commence on 1st February, 1944. R practitioners holding A or B2 posts and rejected by the R.A.M.C. and obtained the sanction of the Scottish Central Medical War Committee, may also apply.

Applications, with 3 relative testimonials, to be lodged with the undersigned. No canvassing.

R. MORRISON SMITH, C.A., F.H.A., Secretary and Cashier.
Glasgow Royal Infirmary.
Office: 135, Buchanan-street, Glasgow, C.1.

EAST SUFFOLK AND IPSWICH HOSPITAL, Ipswich. (400 Beds— 7 Residents.) Applications are invited from registered medical practitioners, including those within 3 months of qualification and liable under the National Service Acts, for the appointment of 3 HOUSE SURGEONS (A). The normal period of appointment is 6 months. Salary is at the rate of £175 p.a., with full residential emoluments.

Apply: ARTHUR GRIFFITHS, Secretary.
The Hospital, Ipswich.

LEIGH INFIRMARY, LANCS. (General Hospital—86 Beds). Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant immediately. Salary £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months; otherwise not exceeding one year. Applications from friendly alien practitioners are also invited.

Applications, stating age and accompanied by copies of three testimonials, to be addressed to—
B. R. CARTER, Secretary-Superintendent.

THE GUEST HOSPITAL, Dudley. (The Resident Staff consists of a Resident Surgical Officer and 2 House Surgeons.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of HOUSE SURGEON (B2), now vacant. The salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications to H. RAYMOND HURST, House Governor and Secretary.
16th December, 1943.

WHITCHURCH EMERGENCY HOSPITAL, Cardiff. (800 Beds.) Applications are invited immediately from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), 2 vacancies. The appointments are for 6 months. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, qualifications, and nationality, should be accompanied by copies of recent testimonials and sent to the Medical Superintendent.

ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY, WIGAN. (Normally 189 Beds.) Applications are invited from registered medical practitioners (Male) for the appointment of RESIDENT HOUSE SURGEON (B2), vacant 1st January, 1944. The salary is at the rate of £175 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise it may be extended for a further period.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials should be sent as soon as possible to—
A. STANLEY BRUNT, General Superintendent and Secretary.

HIGH WYCOMBE AND DISTRICT WAR MEMORIAL HOSPITAL. (100 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2), from 1st February, 1944. Salary at the rate of £200 p.a., plus residence and board. The appointment is for 6 months. R practitioners holding A posts may apply.

Applications, marked "R.M.O.," stating age, qualifications, experience, and nationality, together with copies of 3 recent testimonials, to: E. BARBER, Secretary.

WESTMORLAND COUNTY HOSPITAL, KENDAL. (82 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (B2), now vacant. Salary £300 p.a., with board, residence, and laundry. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months; otherwise may be extended.

Applications, stating age, qualifications with dates, nationality, present post, and accompanied by copies of 3 recent testimonials, should be sent without delay to—
J. M. SOMERVELL, Hon. Secretary.

THE ROYAL GWENT HOSPITAL, Newport, Mon. (255 Beds, 130 E.M.S. Beds.) Applications are invited from registered medical practitioners for the following appointments:—

CASUALTY OFFICER (B2), vacant 29th December, 1943. Salary at the rate of £210 p.a. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months.

SECOND HOUSE SURGEON (A), vacant 1st February, 1944. Salary at the rate of £175 p.a.

THIRD HOUSE SURGEON (A), now vacant. Salary at the rate of £175 p.a.

Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months.

The salary is as stated in each case, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and details of previous appointments, accompanied by 3 recent testimonials, should be sent as soon as possible to—
ALAN RUDDLE, Secretary-Superintendent.

COUNTY BOROUGH OF HASTINGS. Hastings Municipal HOSPITAL. Applications are invited from registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER (Female) (B2). The Hospital contains 350 Beds, including a Children's Block and a Maternity Unit of 28 Beds, and is a Group A1 Hospital under the Government's Emergency Hospital Service. Candidates must be fully qualified registered medical practitioners, and should have held a previous resident hospital appointment. Preference will be given to candidates with practical experience of general medicine and anæsthetics. The person appointed will give her whole time to the service of the Council in accordance with the terms of her appointment. Salary £300 p.a., with apartments, board and laundry. W practitioners holding A posts may apply, when appointment will be limited to 6 months; otherwise for 1 year, and is determinable by 1 month's notice on either side.

Applications, on forms to be obtained from me, must be delivered at my office not later than the 7th January, 1944. Canvassing in any form, either directly or indirectly, will be a disqualification.

D. W. JACKSON, Town Clerk and Director of Social Welfare.
Town Hall, "Summer Fields," Hastings.

HULL CORPORATION HEALTH DEPARTMENT. BEVERLEY ROAD HOSPITAL. Applications are invited from registered medical practitioners of either sex for the appointment of TEMPORARY ASSISTANT MEDICAL OFFICER (B1)—MEDICAL. Salary £350 p.a., rising by annual increments of £25 to £450 p.a., plus war bonus, together with board, residence, laundry, &c., or £150 p.a. in lieu of emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Forms of application, &c., may be obtained from, and should be returned duly completed to, the Medical Officer of Health, Guildhall, Hull, not later than 10 A.M. on Monday, the 10th January, 1944.

WORCESTER COUNTY AND CITY MENTAL HOSPITAL, POWICK, NEAR WORCESTER. Locum tenens ASSISTANT MEDICAL OFFICER (B1) (Male or Female) required. Terms £8 8s. per week, together with board, lodging, washing, and attendance. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Apply, stating particulars as to experience, age &c., to the Medical Superintendent.

ESSEX COUNTY COUNCIL. Revised advertisement. Essex COUNTY COUNCIL HOSPITAL, BLACK NOTLEY, near BRAINTREE. SECOND ASSISTANT MEDICAL OFFICER (B1). Applications are invited from registered medical practitioners for appointment as Second Assistant Medical Officer at the Essex County Council Hospital, Black Notley, near Braintree. Duties will include assisting in the supervision of approximately 170 patients suffering from non-pulmonary tuberculosis. Suitably qualified practitioners, including R and W practitioners holding B2 appointments, are invited to apply. Applications will not be considered from R practitioners who are holders of B1 posts unless they have been rejected by the R.A.M.C. Salary at the rate of £350 a year, rising, subject to satisfactory service, by annual increments of £25 to £425 a year, together with the usual emoluments valued at £160 p.a. Appointment limited to 4 years. Successful applicant will be required to pass a medical examination and contribute to the Council's Superannuation Fund. The appointment will be subject to the Council's Sick Pay Rules and Regulations, a copy of which will be forwarded on application, and the Council's Standing Orders.

Applications on the prescribed form, obtainable from the undersigned, accompanied by copies of not more than 3 recent testimonials, which will not be returned, should be addressed to me and delivered at the County Hall, Chelmsford, not later than 3rd January, 1944. Canvassing, either directly or indirectly, is forbidden.

JOHN E. LIGHTBURN, Clerk of the County Council.

County Hall, Chelmsford.

CITY OF PLYMOUTH. Mount Gold Hospital. (200 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the post of RESIDENT SURGICAL OFFICER (B1), vacant during February, 1944. Applicants should have held house appointments and had some experience of orthopædic and fracture work. The duties are mainly in the orthopædic and E.M.S. sections of the Hospital, but may include some duties in the pulmonary tuberculosis wards. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply. The appointment is for 1 year, but terminable at any time by 1 month's notice on either side. Salary is at the rate of £300 p.a., and full residential emoluments. Married quarters are not provided.

Applications, stating age, nationality, qualifications with dates, and details of previous experience, should be sent as soon as possible to: T. PEIRSON, Medical Officer of Health.

Seven Trees, Lipson-road, Plymouth.

GENERAL HOSPITAL, NOTTINGHAM (585 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT ANÆSTHETIST (B1) vacant shortly. The salary is at the rate of £300 p.a. with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

HENRY M. STANLEY, House Governor and Secretary.

GENERAL HOSPITAL, NOTTINGHAM. Ear, Nose, and Throat Department (40 Beds) and large Out-patient Department. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) for the above department. Salary at the rate of £200 per annum, with full residential emoluments. Practitioners within three months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of six months.

Applications to be addressed to the undersigned, stating age, qualifications, experience, &c., together with copies of testimonials. HENRY M. STANLEY, House Governor and Secretary.

ROTHERHAM HOSPITAL. Casualty Officer and Orthopædic HOUSE SURGEON (B2), vacant 1st January, 1944. Salary £250 to £300 p.a., according to experience (with full residential emoluments). Applications are invited from registered medical practitioners, including R and W practitioners who now hold A posts, when the appointment will be limited to 6 months.

HOUSE PHYSICIAN (A), vacant now. Salary £225 p.a., with full residential emoluments.

SECOND CASUALTY OFFICER AND HOUSE SURGEON (A) to Ear, Nose and Throat and Eye Departments, vacant 1st January, 1944. Salary £225 p.a., with full residential emoluments.

Applications are invited for these appointments, including practitioners within 3 months of qualification, liable to service under the National Service Acts, when the appointment will be for a period of 6 months.

Applications should be sent at once to—

T. H. FLETCHER, Secretary-Superintendent.

ROYAL BERKSHIRE HOSPITAL, Reading. Applications are invited from registered medical practitioners, Male and Female for the appointment of CASUALTY OFFICER (A), vacant now. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

H. E. RYAN, Secretary and House Governor.

SWANSEA GENERAL AND EYE HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE PHYSICIAN (A), vacant on or about 8th January, 1944. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications should be forwarded to—

O. C. HOWELLS, Secretary-Superintendent.

13th December, 1943.

COUNTY BOROUGH OF WALSALL. Applications are invited for the post of TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH (Male or Female). Salary £600 p.a., rising by annual increments of £25 to £700 p.a. Applicants must be registered medical practitioners, and preference will be given to one possessing a Diploma in Public Health. The application should be accompanied by full information as to liability for military service, medical fitness, and deferment. The officer appointed will be required to take part in the general public health work of the Borough, including Maternity and Child Welfare, School Medical Work, and Infectious Diseases. The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937.

Forms of application, statement of duties, and terms and conditions of appointment may be obtained from the undersigned.

Applications should be sent to me as soon as possible. Envelopes to be marked outside "Application Asst. M.O.H."

W. STALEY BROOKES, Town Clerk.

Council House, Walsall, 10th December, 1943.

MANCHESTER NORTHERN HOSPITAL (General Hospital—113 Beds), Cheetham Hill-road, MANCHESTER, 8. Applications are invited from registered medical practitioners for the following posts:—

RESIDENT SURGICAL OFFICER (B1). Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £200 p.a., with board and residence. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

RESIDENT MEDICAL OFFICER (A). Salary £150 p.a., with board and residence. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Both appointments are for 6 months from 21st January, 1944.

Applications should be sent to Mr. JAMES C. DANIELS, Secretary, 38, Barton-arcade, Manchester, 3, immediately.

BURY INFIRMARY, Lancashire. (159 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY HOUSE SURGEON (A), now vacant. Post includes duty in Eye and Ear, Nose, Throat Departments. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months; otherwise renewable.

Applications, giving full particulars, to—

H. WILKINSON, Superintendent.

NEW SUSSEX HOSPITAL FOR WOMEN AND CHILDREN, Windlesham-road, BRIGHTON. Applications are invited from registered medical practitioners (Female) for the appointment of HOUSE SURGEON (B2), to commence duties as soon as possible. Salary £150 p.a., with full residential emoluments. W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to: PERCY F. SPOONER, Secretary.

BRISTOL ROYAL HOSPITAL. Incorporating the BRISTOL ROYAL INFIRMARY AND BRISTOL GENERAL HOSPITAL. Applications are invited from registered medical practitioners for 6 (A) resident appointments. Salary in each case at the rate of £80 p.a. War bonus at the rate of £20 p.a. will also be paid in each case with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for 6 months.

Applications to be made on application forms to be obtained from—

ELLIS C. SMITH, F.C.I.S., Secretary and House Governor.

Bristol Royal Infirmary.

DEVON COUNTY COUNCIL. Hawkmoor Sanatorium. ASSISTANT MEDICAL OFFICER (B1). Applications are invited from registered medical practitioners (Male and Female). Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 posts and rejected by the R.A.M.C., may apply. The appointment is limited to 1 year. Previous experience in tuberculosis is desirable but not necessary. The Sanatorium has 160 Beds and deals with all types of tuberculosis, except orthopædic. Salary at the rate of £350 a year, with full residential emoluments.

Forms of application may be obtained from Dr. L. Meredith Davies, 4, Barnfield-crescent, Exeter.

A. J. WITHYCOMBE, Clerk of the Council.

COVENTRY AND WARWICKSHIRE HOSPITAL. Appointment of HOUSE PHYSICIAN (A). Applications are invited from registered medical practitioners, Male and Female, for the above appointment, vacant immediately. The appointment is for 6 months. Salary at the rate of £150 p.a., plus £20 p.a. cost-of-living bonus, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be addressed immediately to—

S. CECIL HILL, House Governor and Secretary.

ANCOATS HOSPITAL, Manchester, 4. Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), 3 vacancies, which will occur towards the end of January next. The appointments are for 6 months. Salary at the rate of £120 p.a., with full residential emoluments.

Applications, accompanied by copies of 3 recent testimonials, to be forwarded on or before 31st December to—

HERBERT J. DAFFORNE,

General Superintendent and Secretary.

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ABERDEEN ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male or Female) for the appointment of MEDICAL REGISTRAR (B1). Applicants should have held house appointments. Preference will be given to candidates holding a higher qualification in medicine. Salary is at the rate of £300 p.a., with £100 living-out allowance if quarters are not available. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply, subject to approval to application by the Scottish Central Medical War Committee. Entry to duty as soon as possible.

Applications (6 copies), stating age, nationality, qualifications with dates, and experience, and accompanied by 6 copies of 3 recent testimonials, should be lodged with the undersigned not later than 8th January, 1944. JOHN A. MCCONACHIE,
1, Albyn-place, Aberdeen. Clerk and Treasurer.

ROYAL HAMPSHIRE COUNTY HOSPITAL, Winchester. (462 Beds.) Applications are invited from registered medical practitioners, Men or Women, for the appointment of HOUSE PHYSICIAN (A), vacant immediately. Salary at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be sent to: D. M. STANBURY, Acting Superintendent and Secretary.
14th December, 1943.

SURREY COUNTY COUNCIL. Public Assistance Department. GROVE ROAD INSTITUTION, RICHMOND. (260 Beds—mainly chronic sick.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of ASSISTANT MEDICAL OFFICER (B2). Salary £250 p.a., with full residential emoluments. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months; otherwise for a period of 1 year.

Apply to County Medical Officer, County Hall, Kingston-on-Thames.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CLINICAL ASSISTANT (B1) to the Fracture and Orthopædic Departments at the Royal Hospital unit. Applicants should have held house appointments and have had orthopædic experience. Preference will be given to candidates holding diploma of F.R.C.S. Commencing salary is at the rate of £300 p.a., plus war bonus, non-resident. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications to: W. H. BOOTH, Secretary, West-street, Sheffield.

THE ROYAL INFIRMARY, Sunderland. (252 Beds in active use.) Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the following appointments which will be for a period of 6 months:—
HOUSE SURGEON (A), from 7th January, 1944.
HOUSE PHYSICIAN (A), from 15th January, 1944.
CASUALTY OFFICER AND HOUSE SURGEON (A), to the Ear, Nose, and Throat Department, from 23rd January, 1944.

The salary is at the rate of £150 p.a., with full residential emoluments. M. J. HUNTLEY, House Governor and Secretary.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners, Male and Female, for the appointment of SENIOR HOUSE SURGEON (B2) for duty at the Devonport Section. The salary is at the rate of £175 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications to: ARTHUR R. CASH, General Superintendent.
11th December, 1943.

WREXHAM AND EAST DENBIGHSHIRE WAR MEMORIAL HOSPITAL. (170 Beds.) The Elective Committee invite applications for the post of HONORARY PHYSICIAN—qualifications M.D. or M.R.C.P.

Applications, stating age, qualifications, and experience, with copies (only) of not more than 3 testimonials, to be sent not later than first post Wednesday, 5th January, 1944, to—
LESLIE SPENCER, Secretary.

CITY OF PLYMOUTH. City General Hospital. Applications are invited from duly qualified and registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (A) at the City General Hospital. The appointment will be for a period of 6 months, but terminable by 1 month's notice on either side at any time. Salary is at the rate of £250 p.a., plus war bonus, and full residential emoluments. All fees received by the officer must be refunded to the Council. The duties will be mainly in the surgical side of the Hospital. Further details may be obtained from the Medical Superintendent of the Hospital. Forms of application are not provided.

Applications must be addressed to the undersigned, together with copies of not more than 3 recent testimonials, as soon as possible. T. PEIRSON, Medical Officer of Health.
Seven Trees, Lipson-road, Plymouth.

NORTHAMPTON GENERAL HOSPITAL. (408 Beds.) Applications are invited immediately from registered medical practitioners, Male or Female, for the post of RESIDENT ANÆSTHETIST (A). Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and nationality, should be sent as soon as possible to—
GORDON S. STURTRIDGE, Superintendent.

CITY AND COUNTY OF THE CITY OF EXETER. City Hospital (PUBLIC ASSISTANCE). Applications are invited from Male registered medical practitioners for the post of MEDICAL OFFICER (B1) (temporary) of the above Institution. The salary will be at the rate of £600 to £700 p.a., according to experience, together with free quarters, board, and laundry for a single man or an additional £100 p.a. for a married man, non-resident. The appointment will be for 12 months in the first instance and thereafter at 2 calendar months' written notice on either side. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C. (satisfactory evidence of which is to be submitted), may apply. Any fees received must be returned to the City Council. Preference will be given to candidates with experience in a similar appointment. The successful candidate will be required to devote the whole of the time to the duties, and he will be on the staff of the Medical Officer of Health.

Application forms, together with particulars of the duties, may be obtained from the undersigned, to whom they should be returned, together with copies of 2 recent testimonials, not later than 6th January, 1944.

The consent of the Minister of Health has been obtained to the making of this appointment. C. J. NEWMAN,
Town Clerk and Public Assistance Officer, Exeter.

MAIDENHEAD VOLUNTARY HOSPITAL, Berkshire. Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

RESIDENT MEDICAL OFFICER (B2). Salary at £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months; otherwise 1 year.

RESIDENT MEDICAL OFFICER (A). Salary at £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months; otherwise 1 year.

Both appointments vacant 1st February, 1944.

Applications, stating age and nationality, and with copies of testimonials, should be sent as soon as possible to the Superintendent-Secretary.

ROYAL WEST SUSSEX HOSPITAL, Chichester. (334 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), now vacant. The appointment is for 6 months. Salary £225 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply.

Applications, with copies of 3 testimonials, to—
14th December, 1943. K. H. WILLIAMS, Secretary.

ROYAL SURREY COUNTY HOSPITAL, Guildford. (341 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT ANÆSTHETIST AND MEDICAL OFFICER (B2) to the Auxiliary Hospital. Salary £225 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months; otherwise may be extended to 12 months.

Applications, stating age, nationality, qualifications and experience, with copies of not more than 3 testimonials, must reach the Secretary-Superintendent not later than 10th January, 1944.

CHRISTCHURCH (NEW ZEALAND) PUBLIC HOSPITAL. Vacancy for RADIOTHERAPEUTIST. Applications from radiologists of British birth holding recognised postgraduate qualifications in radiotherapeutics are invited for the position of Officer in charge of the Christchurch Hospital Radium and X-ray Therapy Department. Duties to commence as soon as possible. Salary £1200 p.a. (N.Z. currency). Travelling allowance: £100 in the case of a single person or £200 in the case of a married man accompanied by his wife and family (N.Z. currency).

Applications close 14th January, 1944. For full details apply to High Commissioner for New Zealand, 415, Strand, London, W.C.2.

Assistant Lady Doctor (Resident) wanted for Private Mental Home few miles London. Psychiatric experience essential. Salary £500.—Address, No. 364, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Doctors, Male and Female, required for Locums and Assistantships. Good salaries paid. Vacancies for Ships' Surgeons.—Write, A. SHAW, Medical Agent, Premier Buildings, 88, Church-street, Liverpool, 1.

Excellent General Practice in Hampshire. Lady Assistant wanted immediately by woman M.B., M.R.C.P. Live in or out as desired. Salary by arrangement.—Address, No. 369, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Practices and Nursing Homes sold—Partnerships arranged — Valuations, Reports, &c. — Over 25 years' experience.—SONGHURST & RICKARD, Valuers and Surveyors, Guildhall Chambers, Exeter.

For Sale, Beck Microscope, 3 Objectives, 2 Eyepieces, Metallurgic, Medical Accessories in case, excellent condition. £18, or near offer.—JACK, 70, Grenville-gardens, Woodford, Essex.

6A, Audiometer, Western Electric, latest model (range 128–8192).—Doctor, 47, Wimpole-street, W.1. WELbeck 7197.

Harley Street and District.—A number of excellent Consulting ROOMS are available for full and part-time use at moderate rents. Particulars on application. ELGOOD & Co., 1, Bentinck-street, Welbeck-street, W.1. Welbeck 8974.

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Tel.: Chancery 6060.

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